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THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

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JOHN E. BURTON

Oil Proration: An Analysis and Evaluation
GEORGE W. STOCKING

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Forestry and Employment
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VOLUME IX NUMBER 2 MAY, 1933 PRICE $1.25 A COPY

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PUBLISHED QUARTERLY BY THE INSTITUTE FOR ECONOMIC RESEARCH
(AFFILIATED WITH NORTHWESTERN UNIVERSITY)

Publication offices: 121 South Pinckney Street, Madison, Wis.
Editorial and General offices: The Institute for Economic Research, Northwestern University, 337 East Chicago Ave., Chicago, Ill.

The contents of the *Journal* are indexed in the *Industrial Arts Index.*

Entered as second-class matter, January 5, 1925, at the post-office at Madison, Wis., under the Act of Congress of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized October 12, 1922. Printed in the United States of America.

Subscription Rates: $5 a year; $1.25 a copy. Remittances may be made by personal checks, drafts, post-office or express money orders, payable to the Institute for Economic Research.

Agents of the *Journal* in Great Britain, B. F. Stevens & Brown, Ltd., 28-30 Little Russell St., British Museum, London, W. C. 1.

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THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

Published by the Institute for Economic Research
(Affiliated with Northwestern University)

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THE JOURNAL OF
LAND & PUBLIC UTILITY
ECONOMICS

MAY
1933

VOLUME IX
NUMBER 2

Building Obsolescence and the Assessor

By JOHN E. BURTON

A TREATISE on the theory of value might well serve as an introduction to a treatment of that phenomenon of building deterioration which is called obsolescence. Improvements upon land, being a class of wasting assets, are subject to a deterioration in value. The utility of buildings and consequently their value may gradually disappear through the action of wear and tear, this action generally being called depreciation. However, the usefulness of buildings may be impaired by factors quite separate from their physical condition. The action of such factors upon the usefulness of buildings which cannot be ascribed to physical wear and tear is spoken of as obsolescence. Horace F. Clark in his book, *Appraising the Home*, has very aptly called depreciation the "physical deterioration" of homes, and obsolescence their "social deterioration".

If it were possible to hold stationary the physical conditions of buildings, obsolescence could be segregated as the difference between the existing demand for the services of buildings and the demand which was anticipated when they were erected. This does not mean that a building must always be used for the purpose for which it was first constructed, for the use might change but the building still continue to possess the same degree of utility as in its original use. Some writers look upon obsolescence as the action of those factors which restrict the usefulness of buildings to a period shorter than that allowed by physical existence. This is not strictly the case, for some buildings may be reduced to a lower level of usefulness and value by the action of obsolescence, and yet continue in use throughout their full physical life.

Obsolescence and depreciation enact similar roles in the breaking down of value; their effect is to reduce the quantity and /or quality of the demand for the services of buildings, and consequently their productiveness and value. Some authorities even go so far as to classify obsolescence as a type of depreciation, but such an approach is confusing both from the theoretical and practical standpoints. Even though the results of the two may be similar, they arise from entirely different sources, *depreciation following the actual using up of units of*

value in the buildings, in other words, the actual enjoyment of services from them, whereas obsolescence is not caused by the actual use or enjoyment of services from the buildings in question, but by their comparative advantages for this use or enjoyment.

In the real estate field, obsolescence is a concept attached to the value of improvements or buildings upon the land. This phenomenon occurs as well in the case of land value, especially urban land, the value of which is based largely upon situs, which in turn is so susceptible to the factors which cause obsolescence. In practice this concept of obsolescence has been attributed only to the improvements upon the land, so it is expedient to accept this usage in the present treatment. The reader is not to understand that the author means to indicate that all factors causing obsolescence react equally upon the land and the buildings, for some events which cause obsolescence of buildings may at the same time cause land to increase in value.

Causes of Obsolescence

Those factors which cause obsolescence in real estate property may arise either from conditions within the building or from conditions quite separate from it. Obsolescence is usually the result of a combination of these two elements, in some cases being primarily attributable to internal conditions and in other cases primarily to external conditions, but in most instances where obsolescence may come predominantly from one source or the other, a causal relationship will be found to exist between the two. The usual causes of obsolescence are discussed in the following paragraphs.

1. One of the most common causes of obsolescence in the improvements upon land is found in the normal growth of land use districts, which bring about an expansion of one type of district upon the fringe of another. Under ordinary conditions such growth and expansion will mean an increase in land value, but, whereas the land use can be changed, most buildings in the area being encroached upon by the new use are not adaptable to that use and consequently must be replaced. Seldom is this replacement necessitated by the physical condition of the buildings, but rather by their economic situation or condition.

2. The same situation arises when there is a shift of a use district because of reasons other than growth and expansion, with the exception that the district from which the shift originated may revert to a lower use, thus bringing a reduction of land value as well as obsolescence to the buildings. In such a case the land value may increase in the district into which the certain use has shifted, but it is probable that the value of the existing buildings will decrease because they are not adaptable to the new use.

Cities have recognized the existence of use districts and have taken steps toward protecting the character of such districts by the enactment of zoning ordinances. Such provisions do tend to regulate sudden and rapid changes, but they are such a recent device that they may be a cause of obsolescence rather than a protection against it. For example, districts which were residential at the time the ordinance was passed may have been potential business districts, and were so zoned, which was a positive method of determining the change in character of the district and hastening the factor of obsolescence upon the buildings in the district at that time.

3. A change of use district of any magnitude, which is in the direction of in-

creasing the use of the district, usually entails the erection of buildings of a different kind or type. The competition between the new structures and the old in the district is the working out of the effect of the district change upon the building values through the channel of obsolescence. This change in type and construction of buildings is not necessarily restricted to a district change and the demand for a new kind of building, but comes about also as the result of progress in the art of building. While the kind or type of building may depend principally upon the use of the district in which it is located, changing construction and style may have no connection with use districts, but may occur gradually for all kinds of structures. Whether new buildings are erected because of the need for a new type or kind, or because of the general increase in the art of building construction and layout, the new buildings offer the tenant or owner greater efficiency and more modern and complete service than the older buildings, and consequently draw the tenants to themselves. This progress in the art of building construction and design is of great social significance in its effect upon the demand for the older buildings. The market reaction toward outmoded structures is analogous to the feminine reaction to fashion, although fortunately it is not so highly developed or readily operative.

4. The general tendency of a building to become obsolete may be broken by its being obsolete the day it is opened to use. Even with the advantages of the improved building technique there still is the element of poor and eccentric construction and layout which may render the building inadequate to furnish the service expected of it. On the other hand, the building may meet every demand for service rendered by its particular type, but may be placed in the wrong location with reference to use districts, which will mean that the anticipated quality of use will not materialize.

5. Individual buildings, or large groups of buildings, may become obsolete because of some specific detrimental influence. The light and air of a building may be shut off by the erection of other buildings. Industrial developments in other use districts in the vicinity produce obnoxious elements which detract from the desirability of the districts in question, except for uses which arise as by-products of the industry. The shift of vehicle traffic routes may render buildings obsolete, some types being obsolete if the traffic is lost, while other types will become obsolete if the traffic is increased; and one of the most common causes of obsolescence to buildings in entire districts is found in the social phenomenon of racial prejudices.

A consideration of the many and interrelated causes of obsolescence indicates that two classes of these causes may be recognized. On the one hand is that form of obsolescence which gradually accumulates because of the normal, regular improvement in the art of building construction, a form of obsolescence which is expected and is in proportion to the degree of progressive building experienced in any community. On the other hand, the building may lose value suddenly and unexpectedly, under extraordinary conditions, conditions which were unforeseen at the time of the erection of the building. Certain conditions cause either gradual obsolescence or this sudden obsolescence, the distinction being but a matter of time; it might take 30 years for the progress in the building art to make a building useless and valueless, and then again the same might happen over night, so to speak. In general, the gradual type of obsolescence

will arise because of the internal conditions of buildings in competition with others, but even here styles involving more efficient layout and operation may change so radically that it is impossible to look upon the occurrence as gradual or normal. In addition to radical changes in style of buildings, the growth and shift of land use districts cause this extraordinary type of obsolescence. Such growth and shifting have been normally expected, but they cannot be taken as normal action upon buildings, because of the inability of man to anticipate accurately the direction of such movements and to translate the movement into the effect upon the buildings.

Magnitude of the Obsolescence Problem

It is safe to say that the problem of obsolescence is more acute in the United States than in any other country of the world. Actual physical wear and tear has been a minor factor in bringing the useful life of American buildings to an end; it has contributed toward that end, but the usual final cause is found in obsolescence. The growth of American cities and the continual change in land use districts and demand for particular types of improvements have kept the life-expectancy estimates of improvements in a state of uncertainty. To complicate the problem, which is decidedly complicated at best, the experience of the past may not be the experience of the future; the slackening rate of increase of population may inject some element of reason and stability into future building construction, and this approaching static condition of population may reduce the migration and shifting of people and their demands for land and buildings.

Even if the above tendencies should reduce the factor of obsolescence to the level which exists in some European cities, the assessor is still confronted with the task of adjustments to care for the obsolescence which is already present in the chaotic real estate situation. Many causes of obsolescence are subtle and difficult of ascertainment; other causes are quite apparent, but still present difficulties of measurement. The City of Chicago has experienced conspicuous examples of the effects of obsolescence, which will serve as model cases to illustrate the operation of this phenomenon. The development of public improvements in Chicago has opened the way for land use changes which otherwise would have been impossible and has permitted a corresponding movement of land values.[1] The increase and decrease of land values following these improvements were accompanied by an impairment of the value of the buildings. In the case of the Michigan Avenue development the result was not altogether one of district expansion, but more of shift and movement; the North Michigan Avenue district moved up to a higher use, competing with the office building and "smart shop" areas of the Loop. The structures in existence in this newly developed area after the widening of the street into a boulevard were not adequate for the use which had been transferred to the district, and could not support the value which had become attached to the land in anticipation of this new use. Many structures were razed and replaced by buildings which would accommodate the new use and return an income consistent with the value of the land; others were remodeled to

[1] For a discussion of the land value changes following certain major improvements in the City of Chicago, see: *The Influence of Public Improvements upon Land Values*, the author's unpublished master's thesis at Northwestern University, 1929. A published source of information regarding the Michigan Avenue development is: Herbert D. Simpson, "The Influence of Public Improvements upon Land Values," 148 *Annals of the American Academy of Political and Social Science* 120, March, 1930.

meet the new situation, and some were left as they were, for which their owners must be duly thankful today. The obsolescence which developed in the buildings brought little or no concern to the land owners of the district because of the simultaneous increase of the value of the land, and in view of the extent of this increase of value and the magnitude of the change of use, building obsolescence was a small factor.

Another section of the city, however, furnished the source of much of the transferred demand for the services of the land in the North Michigan Avenue district. This district is the one centered about South Michigan Avenue, even including sections of the Loop area. The value of the land in this area was affected by the opening of the new competitive district, but more than this, the value change was affected also by a changing character of the southern district itself which reacted upon the value of its improvements. The use level of the district declined, resulting in a decline in the quality of the service demanded of the buildings. The development of North Michigan Avenue was the "last straw" needed to break the back of the once fashionable Gold Coast of the "South Side" and definitely to reestablish this area on the "Near North Side" of the city. The residence type of structure was not the only type of building to suffer a loss of value, for the business which had been established in the southern district followed its market in the northward movement. In all, structures which had been erected to serve a high-class use were relegated to a much lower use; they were more than capable of furnishing the service demanded of them and worthy of an income larger than it was possible to obtain. It was a case of the necessity for writing off capital investment because of *social deterioration*, for the physical condition of the property could not be immediately affected by the desertion of a high-class use. The lower use might cause the rate of wear and tear to increase, but that is a matter for the future, whereas the obsolescence is a matter of current importance.

There are a number of improvements in Chicago which have had the same effect as the Michigan Boulevard development. The effect upon the movement of land uses has been evident and real, but somewhat tempered by the general growth and expansion which has been experienced in Chicago as a whole. If this growth and expansion are retarded because of the approaching static condition of population, the effect of public improvements upon land use changes and building obsolescence will become more acute.

The wholesale district in Chicago is suffering a much more rapid disintegration of a characteristic use, which is adding a stratum of loss of land value to the general decline of values because of the common effects of the depression, and is causing the accumulation of a tremendous charge of building obsolescence. The general decline in demand for the service of land and buildings, which has been experienced by almost all use districts in the city, has been magnified in this wholesale district by other factors. This district has been the center of the wearing apparel and allied industries in Chicago, and the buildings in that district have been erected or adapted primarily for that utilization, in some cases for manufacture and in other cases for the wholesaling functions of the industry. A special study of this district has unearthed the major causes for its changing character.[2] The firms

[2] See the author's "Changing Land and Building Values in the Chicago Wholesale District," *Skyscraper Management*, January, 1933.

upon which this district depended for its existence have shown a marked movement out of this district; some have left Chicago altogether, because of more favorable conditions for the manufacture of their goods in other parts of the country; others have left this old established district in favor of a new section of the city, this new section being one building —the Marshall Field Merchandise Mart which was opened to tenants in May, 1930. This Merchandise Mart merits being called a section of the city because it added 4,000,000 square feet of floor space for the use of wholesalers in the City of Chicago, an area equal to 37% of the floor space in 149 buildings in 20 blocks in the so-called wholesale district.

It was found that 63% of 3,272 units of manufacturers and wholesalers of wearing apparel and allied lines were located in the old wholesale district in 1921; in 1929 the total number in the city had decreased 10%, and the number in the wholesale district 16%; the number had decreased 20% between 1921 and 1932 for the entire city, while the wholesale district suffered a loss of 43%. The loss to the wholesale district, which had been the center of this trade, was 115% greater than the loss for the entire city. Only one section showed any gain, and that was the above mentioned Merchandise Mart. This one building housed 18¾% of the total number of units in the spring of 1932.

After eliminating the tenants in the Mart who did not represent a bona fide withdrawal from some other building in the City of Chicago, it was found that 375 tenants had entered the building, abandoning a location elsewhere in the city. One hundred and sixty-five of these tenants came from the 149 buildings in the wholesale district; some of those 149 buildings did not contribute to this movement because they were already empty, but others supplied over 20 tenants apiece. Vacancies in the wholesale district, as indicated by a sample of 30 buildings, have increased from 14.9% in 1928 to 36.9% in 1932, whereas the vacancies in office buildings in the central business district increased from 14.0% to 22.6% during the same period of time. The average net income of those 30 buildings before the deduction of depreciation and taxes declined 46.1% between 1928 and 1931.

The buildings in this old wholesale district had been built or adapted for a particular use. With a reduction both in quantity and quality of the demand for their services, they will have to be adjusted to some other use, if they are to be used at all. The Merchandise Mart is a marked technical advance in structures for housing wholesaling activities, and its "pull" upon the wholesale district combined with the "out of Chicago movement" of a certain class of tenants has placed a heavy charge of obsolescence upon some buildings and increased the already heavy obsolescence on the remainder. This is an extraordinary form of obsolescence causing as much loss of value in one sweep as otherwise might have taken years to develop under any ordinary or normal course of events.

The Lower East Side in New York City presents an intense condition of obsolescence. The economic rearrangements in the New York Region have completely changed the character of this area and drained it of its once prosperous use. Between 1900 and 1922 there was a decided movement of various industries from their concentrated stand in this area; some of them moved to the outer fringe of the metropolitan area and others followed the "up the island" movement on Manhattan.[3] Today the

[3] *Regional Survey of New York and Its Environs*, Vol. I, 1s.

area is in need of complete rehabilitation so that some uniform use of the land may be established and the old buildings either adapted to that use or replaced by buildings which may coincide with the new use.

In Cleveland, Ohio, the development of the Union Terminal project on the Public Square has added considerable office and store space to the area which already existed in the central business district of the city. The development has greatly improved the character of the area about the Public Square and has placed it in direct competition with the area east of the Public Square along Euclid Avenue. A decided movement of tenants, both office and store, has taken place. The situation is much akin to the effects of the Marshall Field Merchandise Mart in Chicago, except that the tenant "pull" is not as concentrated on a particular type of tenant.

The National Association of Building Owners and Managers has been concerned with the problem of obsolescence for a number of years and in 1922 published a particularly enlightening study of the subject, which showed among other things the movement of the business districts of a number of cities over a period of years.[4] In Portland, Oregon, the city started in 1845 at the edge of the Willamette River; up to 1871 the principal street was one block from the river; from 1871 to 1894 it had moved another block from the river; in 1894 it shifted back two more blocks and remained there until 1909 when the business district changed its axis and centered about Washington Street which is perpendicular to the river, with its central point being about six blocks still farther removed from the river. In this city the center of the business district moved some nine blocks between 1845 and 1909, with the biggest jump coming between 1894 and 1909. In Seattle, Washington, the business center of the city moved seven blocks between 1890 and 1920, and in Omaha, Nebraska, the business district moved six blocks between 1860 and 1922 and changed its axis. These cases of district shifts were illustrated by the obsolescent condition of the buildings which were left in the wake of these movements, buildings which were physically sound but practically worthless in the light of the utility they once possessed.

The above cases are but a few illustrative examples of this general phenomenon. They indicate the degree of severity which may attend the action of obsolescence, and the necessity of recognizing the effects of such action. The causes of obsolescence are susceptible to conditions of time and place, but the general tendencies are sufficiently evident to permit the formulation of an equitable approach to the problem.

Obsolescence and Real Estate Taxation

In the majority of assessment jurisdictions, where there is a *system* of assessment, the assessor usually follows a summation method of appraising the value of real estate. In appraising the value of the improvements it is customary to use the reproduction cost as an index of value. This procedure carries the assumption that normally the value of a new building is its cost of construction, and this cost of constructing the building under consideration, at the time of the assessment, is the starting point of all such building assessments. The vagaries of value limit this reproduction cost to but a starting point in building assessment procedure, a point from which many steps have to be taken. In the first place, a portion of that reproduction

[4] Earle Shultz, "The Effect of Obsolescence on the Useful and Profitable Life of Office Buildings," *Bulletin* of the Nationl Association of Building Owners and Managers, Supplement, April-May, 1922.

cost has usually been used up and enjoyed by the physical wear and tear of use and age, which necessitates the application of the factor of depreciation. This adjustment does not cover all factors which may cause the cost of production of a building to differ from its value, for no recognition has been given the economic factors discussed above as obsolescence. To approach a fair and equitable estimate of the value of a building the depreciated reproduction cost of a building must be reduced by the amount of the obsolescence which is present at the time of the assessment. Theoretically, this procedure will give the value of the building, an amount which even the economist may recognize as value. However, many problems of unknowns appear between the words on this page and the actual work of the assessor, unknowns which the economist can call "x," "y" and "z," where the assessor must determine to the best of his ability the actual percentages which can be translated into dollars and cents.

In the treatment of obsolescence there is a distinction between the treatment by the assessor, the appraiser, and the accountant. Fundamentally, there should be no distinction between that by the assessor and the appraiser, for the assessor is an appraiser for the purposes of taxation, but in actual practice there is a difference of treatment. The assessor must appraise all taxable property in his jurisdiction; it must be done in a certain short period of time, and as far as the assessments are concerned, they should be more concerned with *equality* than with *full* value. If such a wholesale appraisal is to be equitable and completed within the time permitted by law, the assessor is practically bound to a system wherein standard units are employed and which follows indexes that are reasonably easy of ascertainment.

The appraiser can approach the problem of obsolescence in a more deliberate manner. The appraiser is usually concerned with business property, for which an income appraisal can be made, whereas the assessor must assess this type of property and all other property which does not produce a tangible form of income. To an appraiser the presence of obsolescence is reflected in the income derived from the property in question, if that property is income property; in such an evaluation the appraiser is not concerned with the amount of obsolescence which may have accumulated between the date of the erection of the building and the date of appraisal, but with determining the amount which may occur in the future in addition to depreciation, and using it as one of the annual deductions from gross income.

Both the assessor and the appraiser seek value, whereas the accountant, acting in the interests of the management of property, seeks to preserve the capital invested in the object of value. The accountant is concerned with setting aside sufficient allowances to replace the object when it reaches the end of its useful life, this allowance including both depreciation and obsolescence. If the assessor follows a reproduction-cost basis of value, he must know the accumulated amount of depreciation and obsolescence, but in an income appraisal the appraiser need not be concerned with that which has passed; he "is concerned solely with estimating building values which *can be returned* during the remaining life of the building."[5]

Obsolescence and the Assessor

The part played by obsolescence in the valuation scheme of the assessor has been explained above. It now remains

[5] Babcock, *The Valuation of Real Estate*, (New York: McGraw-Hill Book Co., 1933), p. 403.

to consider the manner in which the assessor determines the amount by which the depreciated reproduction cost is reduced to care for the obsolescence which may have taken place. An assessment may set forth accurately and equitably the depreciated reproduction cost of the buildings in the tax jurisdiction, but it may be inconsistent with the value of those buildings because of a failure to accord proper consideration to obsolescence.

The treatment of obsolescence does not lend itself to the mechanical methods followed in the determination of the reproduction cost of a building, but calls for considerable knowledge of the causes and effects of the phenomenon, and an intelligent application of this knowledge. The average field man from an assessor's office is totally unequipped to determine the amount by which the depreciated reproduction cost of a building should be further reduced because of obsolescence. One man, with the information which should be in every assessor's office, would be better able to handle the problem adequately from an office desk, than could the majority of men in the field.

Obsolescence formulae, which have been developed by assessors or for assessors, afford the assessor only mathematical headaches. They usually include unknown quantities in the equation which are as difficult of ascertainment as the fair market value of the building itself, and it is this fair market value which the assessor is seeking. The following equation is presented as an example of the futility of their use:

$$Ob = (R - P) - Mb$$

in which

Ob = obsolescence.
R = present-day cost of reproduction.
P = physical depreciation dependent upon the life of the building, in years.
Mb = present market or income value of building.

R and P can be figured with mathematical exactness and the determination of the value Ob will, therefore, be dependent upon the determination of the value Mb.[6]

To the assessor, Mb is that value which he is seeking, so he would be using an equation containing two unknowns without the benefits of simultaneous equations.

A reading of Regulation 77 of the Revenue Act of 1932, Supreme Court decisions and decisions of the Board of Tax Appeals, indicates the manner in which obsolescence is treated under the federal income tax. Therein, obsolescence is treated as a form of depreciation and may be deducted from gross income as a tax-free charge, when a point has been reached where it can be predicted with reasonable accuracy that the continued use of a property beyond a certain future date, prior to the end of its normal useful life, will be impossible or unprofitable. This applies to both forms of obsolescence recognized by the Treasury Department, that is, "normal" and "extraordinary." This latter type of obsolescence is deductible when and if it can be shown to be a reasonable certainty, while "normal" obsolescence is as certainly accepted as ordinary depreciation, and is considered as a part of the ordinary depreciation charge. Thus, in the rates of depreciation published by the Bureau of Internal Revenue,[7] those rates are found to be based upon the "probable useful life of the various assets shown." In the further words of the report:

"It has been found that in certain classes of exhausting assets, obsolescence, rather

[6] Quoted from Prouty, Collins and Prouty, *Appraisers and Assessors Manual* (New York: McGraw-Hill Book Co., 1932), p. 89.

[7] *Depreciation Studies*, Preliminary Report of the Bureau of Internal Revenue, Treasury Department, January, 1931.

than ordinary wear and tear, becomes an important factor in determining the allowance. The probable useful life and rates of depreciation based thereon include an allowance for normal obsolescence. They do not include any allowance for sudden or extraordinary obsolescence such as is occasioned by revolutionary inventions, abnormal growth or development, or other unpredictable factors which materially lessen the probable useful life of property . . . For instance, the normal useful life of an office building, apartment, or other building leased to tenants may be materially lessened by the erection of newer buildings of radically different styles, involving greater efficiency of layout and operation. A pronounced shift in the business district, or character of the neighborhood, may render the building unfit for the purpose for which it was erected or for any equally valuable use. Accordingly, the depreciation shown should be modified to give full effect to extraordinary obsolescence affecting the useful life of particular assets."

It is difficult to set up depreciation tables which are not confounded with an element of obsolescence, because but few classes of buildings in American cities have been allowed to live out their complete physical life. Because of this, annual building life ratios based upon probable useful life are more reliable than those based upon physical existence. Life ratios based upon probable useful life of buildings include the effect of physical wear and tear, or depreciation, and the effect of obsolescence. They should become the assessor's working factor between reproduction cost of buildings and the value as affected by physical and economic factors. The extent to which the economic factors would be covered by the ratio depends upon the make-up of the experience table of building life. The age of every demolished structure could be averaged by type to give an average life ratio for the various building classifications, but the ratio would be vitiated by the inclusion of those cases wherein the building was demolished because of extraordinary obsolescence. This kind of obsolescence should not enter into the experience table, since it would cause the ratio to be based upon an average including haphazard and unpredictable occurrences. Cases of building demolition because of depreciation and normal obsolescence, however, are data which will give a reliable and typical average. The author fully realizes that there may be cases where the distinction between normal and extraordinary factors of obsolescence may become a matter of splitting hairs, but if such is the situation it will matter little into which category they fall.

Sufficient actual experience of building life exists to enable an assessor to set up normal, probable-useful-life tables for the various classes of buildings in his tax jurisdiction. It is natural that the data should change with time, but so should the experience table, and by keeping such information up-to-date the assessor would have the most reliable forecast of the probable useful life of various kinds of buildings under normal conditions.

The normal, probable-useful-life experience table for a particular class of building may show, for example, that the average normal life is 33 years. If the building in question is 12 years old, the assessor will reduce the reproduction cost at the time of the assessment by 36%. If the average normal life of another class of building is indicated to be 50 years, there will be a 24% reduction in new reproduction cost at the age of 12 years. This is assuming a straight-line write-off of value. After applying this one ratio in the assessment process, the assessor has a depreciated, normally "obsolesced" reproduction cost of a building. If no radical changes in the construction of that type of building

have occurred, and if nothing has happened to change the character of the district in which it is located, such a figure should be a fair estimation of the value of the building. If, however, these extraordinary factors of obsolescence have arisen, the appraisal will exceed the value in proportion to the effect of these factors.

Extraordinary obsolescence is a phenomenon which is ascertainable with reasonable accuracy by observation, and can be allocated to particular types of buildings or to particular use districts. If a radical change occurs in the style and construction of a certain kind of building, evidence has been presented which indicates that that type of building will lose value more rapidly than has been provided for by the assessor in his normal probable-useful-life estimates, and he will have to adjust the appraisal accordingly. The same will be true in the case of change of character of a use district. If the district is moving toward a higher use and the existing buildings will not accommodate this use, their life will be materially reduced. If the character of the district degenerates and the buildings must be removed, the treatment should be the same; however, it may be possible for the buildings to continue in existence and render just as adequate and efficient service as any other structure would be able to provide, in which case the income productivity and not the life of the building would be reduced, which would necessitate a new value base, and in all probability a new probable-useful-life classification for the buildings thus affected.

Extraordinary obsolescence because of radical type and construction changes can be "spotted" in the assessor's jurisdiction, and that arising because of use district changes can be "mapped." The zoning maps of a city present one check upon the standard uses for different districts, but cannot be relied upon as an only means, because changes may occur within one zoned area. These character changes are evident, however, and can be laid out on a map with a reasonable degree of accuracy.

The above suggestions are relative to the segregation of the external evidence of extraordinary obsolescence. The measurement of this phenomenon is another matter. Extraordinary obsolescence arises because of the failure of a structure to meet an established standard, and this failure can be measured in terms of an income differential. Particular caution has to be taken in the use of the income data, but then, the same is true for all assessment and appraisal work and should not be a deterring factor. In those cases where extraordinary obsolescence must be measured in relation to time, the common effects of price-level changes and other general conditions must be eliminated from the income data. Where extraordinary obsolescence may be measured at a given instant of time by comparative methods, the adjustment for general conditions is not necessary. There may be a question concerning the use of net or gross income as a base for determining the extent of extraordinary obsolescence. Net income may be regulated by so many factors other than those of obsolescence that it may be difficult to separate the effective from the non-effective factors. Gross income per unit of rentable space would seem to be the equitable base to follow. It is not necessary for the assessor to examine each building which may be affected by obsolescence, but averages can be established by the use of sample cases which will serve as control figures for types of buildings affected or for buildings in the

districts affected. That obsolescence which arises from internal conditions of a single building has to be considered as an individual case. In general, they are so few that it is quite possible to give them separate consideration.

The ravages of obsolescence may be allayed by the remodelling of the building affected by it, and the extent to which this is possible and is done must be recognized by the assessor. In many cases it will necessitate a reclassification of the building for future treatment. There are a certain few buildings throughout this country which enjoy the enviable position of being enshrouded with a halo of tradition and sentiment which offsets the effects of obsolescence. It is fortunate for assessors that the majority of such structures are exempt from taxation. However, a few cases are found which are commercial properties subject to taxation, wherein the usual assessment procedure would produce an appraisal short of the average level of appraised value. Such properties require special consideration.

In the assessment systems which use the "permanent public record cards" to show the details of land and building values for each parcel of real estate in the assessment jurisdiction, the treatment of depreciation and obsolescence of the improvements could be expedited and clarified if those cards were to carry a small graph of the course of the building values during their lifetime. The axes of the graph would be percentage of new reproduction cost and years of life. Such a graph could serve as a check between the course of value for a particular building and the average course of value for all buildings in that class. A serious departure from the "master" curve would necessitate an explanation, and that explanation would be found in some form of extraordinary obsolescence. Such a device would be of benefit to both the assessor and the taxpayer.

Municipal Ownership in the Last Five Years

By PAUL JEROME RAVER

IN a period when business, both public and private, has been brought face to face with a debt dilemma and other economic problems of unprecedented proportions, so-called "normal trend" lines serve merely as unpleasant reminders of the pitfalls involved in their use. Nevertheless, from the flood of inquires about the trends in municipal ownership in the electric light and power industry in the United States recently received by the Institute for Economic Research, it is evident that statistical data about this question are still in demand. These inquiries evidence an impression, rather generally held, that the number of municipally owned enterprises in existence in the United States has definitely reversed its downward sweep of the past decade and that new or acquired enterprises are now being established more rapidly than in the period 1927–30, indicating a revival of interest in this form of ownership.

It should be noted at the outset, however, that "interest" is evidenced not only by the establishment of new municipally owned enterprises, or acquisitions of existing properties, but also by attempts at, or agitations for, municipal ownership. The sweep of the electrical industry into villages and hamlets throughout the country has materially reduced the potential opportunities for municipally owned establishments to arise. Furthermore, the establishment of new municipal enterprises in competition with existing privately owned utilities or the acquisition of private properties by municipalities desiring to purchase them meets many obstacles in the statutes as well as in the legal protection of utilities' property rights—as, for example, in the claims for severance damages and litigation of such claims. Hence, the number of new municipal establishments or the number of completed acquisitions is not a complete index of a "revival of interest." The number of acquisitions or attempts to acquire privately owned plants by municipalities would probably be a significant index if the number of such attempts were known. For example, in one company's territory there are at present two dozen applications for acquisition by municipalities pending before the state commission having jurisdiction. While recognizing these additional indexes of "interest," we must be content in the present article with the factual data available, modifying our interpretations in accordance with their limitations.

The half century of municipal ownership in the United States which ended with the close of 1932 has been marked by periods of rapid growth in the number and size of municipal enterprises[1] as well as by periods of sharp recession,[2]

[1] Eight hundred and one new municipal enterprises were established in the five years 1912–17 and only 127 changed to private ownership, a net increase of 674 establishments. (Dorau, Herbert B., *The Changing Character and Extent of Municipal Ownership in the Electric Light and Power Industry* (Chicago: Institute for Research in Land Economics and Public Utilities, 1929), Tables 2 and 3, pp. 13 and 14.) The average size of generating plant increased from 347 to 453 horsepower in the same period. (Raver, Paul Jerome, *Recent Technological Developments and the Municipally Owned Power Plant* (Chicago: Institute for Economic Research, 1932), Table IV, p. 20.)

[2] In the three-year period 1924–7 some 834 municipal enterprises changed to private ownership, while 133 new establishments originated, a net loss of 701. (Dorau, *op. cit.*, Table 4, p. 17.) During the same period

(Footnote 2 continued on page 122)

with varying degrees of growth and stagnation between these extremes. The data describing this evolution of the municipal ownership phenomenon have already been published[3] and have brought the picture down to date as of December 31, 1930, which marked the end of a period (1923–30) during which the number of such establishments in existence decreased rapidly, whereas the average size as expressed in terms of population of towns served or in terms of horsepower capacity of generating plants steadily increased. Current inquiries, therefore, are concerned with what has happened in the past two years.

The starting point for this study of the most recent trends is the number of municipally owned enterprises[4] at the beginning and end of the five-year period, 1927–32.

Number of municipally owned establishments* in existence, December 31, 1927	2,424
Number of municipally owned establishments in existence, December 31, 1932	1,885
Net decline in five years	539

*It may be noted that the number in existence on December 31, 1927 is somewhat higher than the number given in Dr. Dorau's study mentioned above. The writer has kept the data up to date and has found these additional instances since the publication of the study by Dorau. The total is also higher than that given by the 1927 report of the United States Census of the Electrical Industry, because that survey excluded certain classifications included in our study. Final checking of all data was not completed in time for this publication and minor changes may be necessary. However, it was felt that further delay in presenting these data was not warranted by such changes as may be subsequently discovered.

But these figures are misleading. They fail to show that on December 31, 1930 only 1,938 establishments were in existence. Thus 91% of the decline took place in the first three years of the last five-year period.

Origination of New Municipal Establishments

Perhaps the most adequate statistical index of the trend of municipal ownership sentiment is the number of new instances of such ownership originating in each year. In so far as this index alone may be accepted as a guide, there is certainly quickened interest evident in the past two years.

During the five years from 1927 to the close of 1932, 90 new municipally owned enterprises have come into existence in the United States (Table I). This number by itself is indeed rather insignificant when compared with earlier

(*Footnote 2 continued from page 121*)

the average size of municipal generating plants increased from 827 to 1,703 horsepower and by 1930 stood at 2,779 horsepower. (Raver, *op. cit.*, Table IV, p. 20.)

[3] Dorau, *op. cit.* and Raver, *op. cit.*

[4] Since this study begins with data contained in previous publications of the Institute for Economic Research, it will be advisable to define again the classes of municipally owned enterprises included, as they were defined in the initial publication:

"For the purposes of this report the following classes of municipally owned establishments are included:

"(a) Those which generate and distribute electrical energy directly to private consumers; (b) those which purchase electrical energy wholesale and retail same to private consumers over municipally owned distribution lines; (c) those which do not actually sell current but which do generate and supply electrical energy for street lighting and other public uses; (d) the following special cases: (1) the distribution lines owned by Mineral County, Nevada, serving six municipalities in the County. These were counted as a single establishment; (2) the Hetch Hetchy project of the City of San Francisco, counted as one establishment (not included in the present summary); (3) municipally owned establishments leased to private companies for operation are included; (4) publicly owned establishments in 26 unincorporated places; (5) municipalities leasing and operating establishments owned by private companies.

"*Classes of Establishments Omitted.* (a) Those which purchase electrical energy for street lights or other public uses, even though the street lights are owned by the municipality, but do not engage in selling electricity at retail.

"(b) Those which are owned and operated by the Federal or state governments, primarily for the purpose of supplying light or power to public buildings, military posts, naval stations, United States reclamation service, etc., even though these stations are selling electrical energy to private consumers.

"(c) The following special cases:

1. The undertakings of certain communistic societies.

(*Footnote 4 continued on page 123*)

five-year totals.[5] But of these 90 new instances, we find 66 (70%) originating in the last two years. On the basis of averages, the rate of originations in the last two years has been almost four times that of the first three years of the five-year period. Thus, if a quickened rate of birth of municipally owned establishments may be accepted as an index of a quickened interest in this type of ownership, the year 1931 may mark a critical point in the national trend. Regardless of what the future trend may be—and the financial and legal, as well as technological, difficulties in the way of any marked upward movement are obvious—this reversal in the movement of originations since 1930 gives an additional hint of the critical political and economic situation now facing the privately owned section of the power industry. It represents a new competitive threat to private enterprise. How serious a threat it is can hardly be judged in the midst of the general economic prostration.

This indicated revival of interest in municipal ownership since 1930 may be but a "flash in the pan" or it may mark the beginning of a widespread movement toward public ownership. Before becoming too enthusiastic about the latter possibility, however, advocates of public ownership will have to recognize the critical economic situation in which

TABLE I. NUMBER OF NEW MUNICIPAL ESTABLISHMENTS ORIGINATING IN THE PERIOD 1927–1932, AND ALSO 1927–1930 AND 1930–1932.

States and Geographic Divisions	Number of Originations		
	Three Years 1927–30	Two Years 1930–32*	Total 1927–32
United States	24	66	90
New England	....	....	....
Middle Atlantic	....	1	1
New York	....	....	....
New Jersey	....	....	....
Pennsylvania	....	1	1
East North Central	....	4	4
Ohio	....	....	....
Indiana	....	2	2
Illinois	....	1	1
Michigan	....	1	1
Wisconsin	....	....	....
West North Central	10	31	41
Minnesota	1	14	15
Iowa	2	3	5
Missouri	4	4	8
North Dakota	....	1	1
South Dakota	....	6	6
Nebraska	....	....	....
Kansas	3	3	6
South Atlantic	2	9	11
Delaware	....	1	1
Maryland	....	....	....
Virginia	1	2	3
West Virginia	....	....	....
North Carolina	....	4	4
South Carolina	....	....	....
Georgia	1	1	2
Florida	....	1	1
East South Central	....	....	....
West South Central	5	8	13
Arkansas	....	1	1
Louisiana	....	2	2
Oklahoma	....	3	3
Texas	5	2	7
Mountain	7	11	18
Montana	3	....	3
Idaho	1	2	3
Wyoming	....	....	....
Colorado	....	6	6
New Mexico	....	....	....
Arizona	1	....	1
Utah	2	3	5
Nevada	....	....	....
Pacific	....	2	2
Washington	....	1	1
Oregon	....	1	1
California	....	....	....

*The following towns are included in the number originating in the last two years (1930–2), although there is still some doubt as to the actual date of origination; *Minnesota*—Boy River, Funkley, Lansing, Lynd, Rushford; *South Dakota*—Agar, Cottonwood, Esmond, Fairburn; *Kansas*—St. Benedict; *Colorado*—Bonanza, Cascade, Dacono; *Oklahoma*—Hopeton, Lambert.

(Footnote 4 continued from page 122)

2. Establishments which have been sold to private companies but in which title will not pass to private owners until payments are completed.
3. Cooperative undertakings such as establishments owned jointly by the municipality and Chamber of Commerce or other civic body or individuals.
4. Establishments financed and built by the municipality but sold to private companies as soon as ready for operation." (Dorau, *op. cit.*, pp. 7–8.)

[5] For example, 801 in 1913–7; 791 in 1918–22; and 326 in 1923–7. (Dorau, *op. cit.*, Table 2, p. 13.)

many of the municipalities of the country as well as the power industry now find themselves. As a group, municipalities are confronting a debt dilemma as important, if not more so, than that now facing the utilities. Whereas the latter are scaling down and readjusting their debts by foreclosure, bankruptcy, or other means, when reduction in operating expenses has been an insufficient remedy, no such legal measures are as yet available to municipalities.[6] In order to avoid outright default,[7] many municipalities are anxiously scanning every possible means of securing new revenues. People are still willing to pay for electric service even when delinquent in their taxes, and the municipally owned electric light plant is doubtless making an economic appeal to many city officials who in the past have never looked upon municipal ownership with favor. In many instances, however, the debt which hangs as a millstone about their necks not only provides the incentive for seeking the escape from debt inundation but prevents the escape as well, since new enterprises ordinarily involve new debt.[8]

Under such conditions one would be rash indeed to predict a sudden nation-wide sweep into municipal ownership on the basis of 66 new instances of such ownership in the past two years in the power field—especially when one recognizes that less than ⅓ of these new plants were established in 1932.[9] Neither, however, would one be so rash as to say that such a widespread movement is an impossibility. Because of this present uncertainty these 66 new instances, though relatively small in number, assume importance. They may be the straws that indicate which way the wind is blowing. It seems worth while, therefore, to examine some further indexes of the trend. One of these represents the other side of the picture—namely, the trend away from municipal ownership or the rate of absorption of municipally owned enterprises into privately owned systems.

Changes from Municipal to Private Ownership

Largely as a result of general economic conditions, unsavory disclosures of utility practices, and political repercussions of the past two years, the rate of absorption of municipally owned enterprises into privately owned systems has declined. In fact, in 1932, purchases of municipal, and probably also of private, plants by private capital were almost at a standstill.[10] We have only to look back as far as 1924 to see how drastically this absorption rate has declined. Between 1924 and 1927 the average annual sale of municipal plants to private ownership amounted to 278 per year; in the following three years (1927–30) this rate of loss dropped to 170 per year; and further declined in the last two years (1930–32) to 59 per year, with less than ½ of them changing in 1932. This steady decline in the transfer of municipal plants to private ownership may be stated somewhat differently: 627

[6] However, a bankruptcy bill for municipalities is now before Congress. It would give municipalities power to negotiate with creditors.

[7] Some have been unable to do so.

[8] This is the situation which the "payment out of earnings" plans of the Diesel engine manufacturers are designed to meet.

[9] The exact date of origination (i. e., whether in 1931 or 1932) is uncertain in a few instances. The number of such originations in 1932 is surely less than 20 and it may be less than 15.

[10] The data on the movement from private to municipal ownership were included in the Dorau study from 1882 to 1927 (*Op. cit.*, Table 6, p. 20). Similar data from 1927 to 1932 have not been collected to date; consequently, the exact extent of this additional phase of the movement to municipal ownership cannot be evaluated here.

TABLE II. NUMBER OF MUNICIPAL ESTABLISHMENTS CHANGING TO PRIVATE OWNERSHIP IN THE PERIOD 1927–1932, AND ALSO 1927–1930 AND 1930–1932, BY STATES AND BY GEOGRAPHIC DIVISIONS.

States and Geographic Divisions	Number of Establishments Changing to Private		
	Three Years 1927–30	Two Years 1930–32	Total 1927–32
United States	510	119	629*
New England	2	3	5
Maine	....	....	....
New Hampshire	....	1	1
Vermont	....	....	....
Massachusetts	2	2	4
Rhode Island	....	....	....
Connecticut	....	....	....
Middle Atlantic	7	5	12
New York	1	3	4
New Jersey	4	2	6
Pennsylvania	2	....	2
East North Central	49	21	70
Ohio	10	3	13
Indiana	3	3	6
Illinois	17	6	23
Michigan	16	9	25
Wisconsin	3	....	3
West North Central	302	49	351
Minnesota	40	7	47
Iowa	32	6	38
Missouri	7	3	10
North Dakota	33	2	35
South Dakota	20	1	21
Nebraska	98*	4	102*
Kansas	72	26	98
South Atlantic	86	18	104
Delaware	....	....	....
Maryland	2	1	3
Virginia	3	3	6
West Virginia	3	....	3
North Carolina	22	11	33
South Carolina	16	1	17
Georgia	33	2	35
Florida	7	....	7
East South Central	14	1	15
Kentucky	1	....	1
Tennessee	2	....	2
Alabama	3	....	3
Mississippi	8	1	9
West South Central	36	7	43
Arkansas	2	1	3
Louisiana	6	1	7
Oklahoma	23	5	28
Texas	5	....	5
Mountain	10	13	23
Montana	1	1	2
Idaho	1	1	2
Wyoming	1	....	1
Colorado	4	8	12
New Mexico	....	1	1
Arizona	3	1	4
Utah	....	1	1
Nevada	....	....	....
Pacific	4	2	6
Washington	1	1	2
Oregon	1	....	1
California	2	1	3

*Two of these municipal establishments (Bethany and University Place) were eliminated by consolidation of the towns with Lincoln, Nebraska.

municipal enterprises changed to private ownership in the five years following 1927 but of these only 18.7% changed in the last two years and less than 6% in 1932 (Table II).

The implications in this collapse of the program of acquisitions by private companies in 1932 are, perhaps, even more interesting than those noted above for the small boom in municipal plant originations in 1931. From the side of the private utilities, this collapse in acquisitions reflects, in part at least, the extension of capital investments at higher and higher costs into thinner and thinner territory—a phase of the era of promotion that had much to do with the slowing up of capital turnover ratios and the collapse of certain utility empires. The fact that the acquisitions were being made at constantly higher costs merely indicates that the bull movement in acquisitions (1924–30) was keyed to the bull movement in the stock market. That the acquisitions were being pushed into ever thinner territory was merely a reflection of the fact that

the margin of profitable operation was being pushed lower by the ease with which capital could be secured for such purchases.[11] The collapse of the stock market signalled the change in these relationships and the private companies found themselves loaded with many small properties in thin territory bought at prices which were often too high even in terms of the low cost capital with which they had been purchased.

Just what the private companies got for their money in purchasing municipal enterprises can only be determined by the actual analysis of individual purchases. Suffice it to say, the bulk of the purchases were in what may be considered as marginal territory. Some general idea of what they bought can be gained by an examination of (1) the distribution of their purchases by size of community and (2) a geographic distribution.

The Geographic Picture

These two distributions are especially significant when interrelated as in Table III. Thus, it will be noted, that 349 of these 627 acquisitions in the last five years were in the West North Central geographic division, comprising the broad prairie states of North and South Dakota, Nebraska, Kansas, Minnesota, Iowa, and Missouri (Map I). An additional 43 were acquired from the West South Central section, comprising Oklahoma, Arkansas, Texas, and Louisiana. Thus, 63% of the total acquisitions were in territory in which towns are widely scattered, communities are relatively small, and hence transmission line costs per kilowatt hour of consumption are relatively high. The importance of this density factor is emphasized when we observe from Table III that 287 (73%) of the plants acquired in this territory were in towns of less than 500 people. If to this we add the effect of the severe depression in farm prices affecting the agricultural towns of the weaker class and the curtailment of oil production affecting the oil-pumping load in the southwestern states, we have a picture of what is meant above by extensions into thin territory, as well as a partial explanation for the collapse of the acquisition program in 1932. In so far as these small towns were acquired in anticipation of developing an increased residential load, the hopes were largely exploded by the depression.

The acquisitions in the last two years are shown separately in Table III. The distribution geographically is not materially different from that for the entire period. In the matter of size of community acquired, however, one point of

[11] An example may be taken from a paper prepared for the writer by Nicholas Galitzine.

In 1918, the Middle West Utilities Company served 438 communities with an estimated population of 1,208,800, or an average of 2,760 per town. By 1931, the system embraced 5,321 communities, but 94.5% of them were under 2,500 population, thus dropping the overall average to 1,233 inhabitants per town. Furthermore, almost 20% of this population (1930 Census) consisted of negroes, foreign born whites, and other than native born white racial stocks. Here was a drive into marginal territory not confined to purchases of municipally owned utilities. It may have had social justification (since it brought high-grade electric service to many communities that otherwise might have had none), but in the light of subsequent events its economic justification was certainly questionable. In 1927 the Middle West system had total fixed capital liabilities of $123,909,215, all of which were long-term. By 1931 the total had risen to $294,118,216, of which nearly 30% were short-term notes. A relatively small portion of the latter precipitated the financial collapse of the system. Thus, the rising costs of acquisition and physical interconnection were being paid by the cheap dollars of the period. The example need not be taken as wholly typical of events in the industry but it provides an explanation, in part at least, for the large number of small municipal enterprises absorbed into privately owned systems from 1924 to 1927 and on into 1930 and accounts for the rising average size of the remaining municipal plants. (See footnotes 1 and 2 above.) It also explains in an equally dramatic way why the absorption of municipally owned enterprises so suddenly dropped in 1931 and 1932. The cheap dollars for their purchase had vanished.

difference may be mentioned. Of the total acquisitions for five years, only 9.7% were in towns over 2,000 population. The corresponding figure for the first three years of this period is only 8.2%, but in the last two years 16.2% of the acquisitions were in towns with more than 2,000 population. This may be an indication of a somewhat more cautious attitude in buying new business, which recognizes that the margin of profitable operation of new properties acquired by private companies is now in larger sized communities.

In contrast, it is interesting to examine the newly established municipal enterprises in terms of the size of community. Of the 90 new municipal enterprises originating in the five-year period (Table IV) only 24 began operations in the first three years[12] and eight of these were in communities over 2,000 population. On the other hand, of the 66 originating in the last two years, only seven supplied larger communities (over 2,000 population). While this sample is too small to furnish definite conclusions, there is an indication here that the anticipated margin of profitable operation of municipal plants has been lowered in terms of the size of community. This

[12] See footnote to Table I.

TABLE III. NUMBER OF MUNICIPALLY OWNED ENTERPRISES CHANGING TO PRIVATE OWNERSHIP, BY SIZE OF COMMUNITY AND BY GEOGRAPHIC DIVISIONS.

Population of Community	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	Total United States
	Five-Year Period, 1927–32									
0– 499	....	2	34	275	26	4	12	10	3	366
500– 999	3	3	17	52	24	6	16	7	1	129
1,000– 1,499	2	....	6	9	17	1	5	4	1	45
1,500– 1,999	....	1	5	6	10	1	2	....	....	25
2,000– 2,499	....	....	2	1	7	2	3	1	....	16
2,500– 2,999	....	1	....	2	6	1	1	....	....	11
3,000– 3,499	....	1	1	1	6	....	1	....	....	10
3,500– 3,999	....	2	1	....	1	....	1	1	....	6
4,000– 4,499	....	....	....	....	1	....	....	....	....	1
4,500– 4,999	....	....	....	....	....	....	....	....	....	....
5,000– 9,999	....	1	1	1	3	....	1	....	1	8
10,000–19,999	....	....	....	....	3	....	1	....	....	4
20,000 over	....	1	3	2	....	....	....	....	....	6
Total— All Groups	5	12	70	349	104	15	43	23	6	627
	Two-Year Period, 1930–32									
0– 499	....	1	9	36	5	....	1	7	1	60
500– 999	1	1	5	8	4	1	3	3	....	26
1,000– 1,499	2	....	1	2	1	....	....	2	....	8
1,500– 1,999	....	1	2	....	....	....	1	....	....	4
2,000– 2,499	....	....	2	....	1	....	2	....	....	5
2,500– 2,999	....	....	....	2	2	....	....	....	....	4
3,000– 3,499	....	1	....	....	1	....	....	....	....	2
3,500– 3,999	....	....	....	....	....	....	....	1	....	1
4,000– 4,499	....	....	....	....	1	....	....	....	....	1
4,500– 4,999	....	....	....	....	....	....	....	....	....	....
5,000– 9,999	....	....	1	....	....	....	....	....	1	2
10,000–19,999	....	....	....	....	3	....	....	....	....	3
20,000 over	....	1	1	1	....	....	....	....	....	3
Total— All Groups	3	5	21	49	18	1	7	13	2	119

TABLE IV. NUMBER OF MUNICIPALLY OWNED ESTABLISHMENTS ORIGINATING, DISTRIBUTED BY SIZE OF COMMUNITY AND BY GEOGRAPHIC DIVISIONS

Population of Community	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	Total United States
	Five-Year Period, 1927–32									
0– 499	....	....	2	23	2	....	3	11	....	41
500– 999	....	....	2	5	4	....	....	5	....	16
1,000– 1,499	....	....	....	6	1	....	1	2	1	11
1,500– 1,999	....	....	....	3	2	....	3	....	....	8
2,000– 2,499	....	....	....	1	....	....	....	....	....	1
2,500– 2,999	....	....	....	2	....	....	1	....	1	4
3,000– 3,499	....	....	....	....	1	....	....	....	....	1
3,500– 3,999	....	....	....	....	....	....	1	....	....	1
4,000– 4,499	....	....	....	....	....	....	1	....	....	1
4,500– 4,999	....	....	....	....	....	....	....	....	....	....
5,000– 9,999	....	....	....	1	1	....	2	....	....	4
10,000–19,999	....	1	....	....	....	....	1	....	....	2
20,000 over	....	....	....	....	....	....	....	....	....	....
Total— All Groups	....	1	4	41	11	....	13	18	2	90
	Two-Year Period, 1930–32									
0– 499	....	....	2	18	2	....	3	8	....	33
500– 999	....	....	2	5	4	....	....	2	....	13
1,000– 1,499	....	....	....	6	1	....	1	1	1	10
1,500– 1,999	....	....	....	1	1	....	1	....	....	3
2,000– 2,499	....	....	....	....	....	....	....	....	....	....
2,500– 2,999	....	....	....	....	....	....	....	....	1	1
3,000– 3,499	....	....	....	....	1	....	....	....	....	1
3,500– 3,999	....	....	....	....	....	....	....	....	....	....
4,000– 4,499	....	....	....	....	....	....	....	....	....	....
4,500– 4,999	....	....	....	....	....	....	....	....	....	....
5,000– 9,999	....	....	....	1	....	....	2	....	....	3
10,000–19,999	....	1	....	....	....	....	1	....	....	2
20,000 over	....	....	....	....	....	....	....	....	....	....
Total All Groups	....	1	4	31	9	....	8	11	2	66

would follow, of course, from the effect of the fall of the price level. As long as prices were rising, private utilities had the advantage in meeting competitive threats of new municipal (or private) plants. Similarly the fall in prices has exposed the privately owned utilities to these competitive threats from new plants installed at lower cost levels. In addition, the Diesel engine manufacturers, faced with financial problems of their own, have been making sharp price reductions and pushing "payment-out-of-earnings contracts." This together with low-cost fuel oil[13] creates a significant change in the competitive situation which private utilities must face.

The Net Increase or Decrease

By combining Tables III and IV we get the net result of increases by origination of new municipal enterprises and decreases by sale of such establishments to private companies. The result is shown in Table V, distributed by geographic divisions.

This table shows geographically the degree to which the trend from municipal to private ownership has been checked in

[13] Oil prices, which were $1.28 per barrel for 36° gravity Mid-Continent crude in the latter part of 1927 (*Oil Weekly*, January 31, 1930, pp. 64–5) had dropped, after a rise in the interim, to 92 cents per barrel by October, 1930 (*Ibid.*, January 30, 1931, p. 196).

TABLE V. THE NET INCREASE OR DECREASE IN THE NUMBER OF MUNICIPALLY OWNED ESTABLISHMENTS IN THE THREE-YEAR PERIOD 1927–30 AND IN THE TWO-YEAR PERIOD 1930–32, BY GEOGRAPHIC DIVISIONS

Geographic Divisions	Net Increase or Decrease*	
	1927–30	1930–32
New England	−2	−3
Middle Atlantic	−7	−4
East North Central	−49	−17
West North Central	−290	−18
South Atlantic	−84	−9
East South Central	−14	−1
West South Central	−31	+1
Mountain	−3	−2
Pacific	−4	....
United States	−484	−53

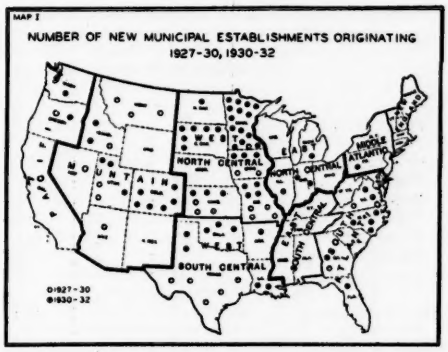
*Decrease shown by a minus sign.

the past two years. It has practically stopped in most sections of the country. In one section the trend has been reversed (West South Central). Some of the economic reasons for these movements have been discussed above. That public sentiment has been affected by these economic changes can hardly be denied. Whether this public sentiment will be translated into political action of a more positive character is hardly a predictable matter under present legal and economic conditions or from the data in this study.

The Analysis by States

The changes assume a new interest when analyzed by states. Table I and Map I show by states the number of municipal establishments originating; Table II, the number changing to private ownership during the first three years and the last two years of the five-year period (1927–32); and Table VI, the net number which were in existence at the beginning and end of these periods.

The largest number of originations in any state (15) appear in Minnesota and 14 of these began in the last two years. Of the 47 changes from municipal to private ownership in this State only seven occurred in the last two years.



As a result, the trend away from municipal ownership has been reversed in this State. Other states with recent indications of such a reversal are South Dakota, Louisiana, Texas, and Oregon, each of which had from one to five more municipally owned enterprises at the close of 1932 than at the close of 1930.

Strangely enough, Nebraska, the leading state in point of number of municipally owned establishments in existence, did not have a single new enterprise established in the five-year period. Thus, no tangible results from the recent legislation in favor of municipally owned power districts in terms of new municipally owned establishments have as yet materialized.[14] Nebraska is equally noteworthy for leading the states with 100 changes from municipal to private ownership in the five-year period, only four of which changed in the last two

[14] Initiated Law No. 324, effective December 3, 1930 provides: "any city, village, or public electric light and power district in this state is hereby authorized to enter into agreements to connect and interconnect its electric light and power plant, distribution system and/or transmission lines with the electric light and power plant, distribution system and/or transmission lines of any one or more other cities, villages, or public electric light and power districts in this state, upon such terms and conditions as may be agreed upon between the contracting cities, villages and public power districts."

years. Certainly the activity of private interests in acquiring small utilities in this State has suddenly stopped.[15] The

TABLE VI. NUMBER OF MUNICIPAL ESTABLISHMENTS IN EXISTENCE AT DECEMBER 31, 1927, DECEMBER 31, 1930, AND DECEMBER 31, 1932, BY STATES AND GEOGRAPHIC DIVISIONS.

States and Geographic Divisions	Number of Municipal Establishments in Existence		
	December 31, 1927	December 31, 1930	December 31, 1932
United States	2,424	1,938	1,885
New England	86	84	81
Maine	8	8	8
New Hampshire	8	8	7
Vermont	16	16	16
Massachusetts	46	44	42
Rhode Island	2	2	2
Connecticut	6	6	6
Middle Atlantic	118	111	107
New York	59	58	55
New Jersey	18	14	12
Pennsylvania	41	39	40
East North Central	463	414	397
Ohio	122	112	109
Indiana	87	84	83
Illinois	85	68	63
Michigan	79	63	55
Wisconsin	90	87	87
West North Central	1,020	728	710
Minnesota	169	130	137
Iowa	162	132	129
Missouri	60	57	58
North Dakota	51	18	17
South Dakota	61	41	46
Nebraska	271	173	169
Kansas	246	177	154
South Atlantic	304	220	211
Delaware	7	7	8
Maryland	10	8	7
Virginia	20	18	17
West Virginia	6	3	3
North Carolina	92	70	63
South Carolina	40	24	23
Georgia	90	58	57
Florida	39	32	33
East South Central	83	69	68
Kentucky	10	9	9
Tennessee	20	18	18
Alabama	18	15	15
Mississippi	35	27	26
West South Central	180	149	150
Arkansas	17	15	15
Louisiana	37	31	32
Oklahoma	94	71	69
Texas	32	32	34
Mountain	120	117	115
Montana	3	5	4
Idaho	16	16	17
Wyoming	16	15	15
Colorado	37	33	31
New Mexico	4	4	3
Arizona	7	5	4
Utah	33	35	37
Nevada	4	4	4
Pacific	50	46	46
Washington	15	14	14
Oregon	12	11	12
California	23	21	20

TABLE VI. NUMBER OF MUNICIPAL ESTABLISHMENTS IN EXISTENCE AT DECEMBER 31, 1927, DECEMBER 31, 1930, AND DECEMBER 31, 1932, BY STATES AND GEOGRAPHIC DIVISIONS—*Continued.*

conclusion, again, may be that this sudden collapse of an acquisition program may have been as much a result of economic prostration of private capital in thin territory as of any sensible stiffening of public sentiment against such acquisitions. Both forces were probably operative here, but the fact that no new municipal enterprises originated in the entire five years tends to place the emphasis in this State on the economic rather than the political factors.

The situation is somewhat different in the neighboring state of South Dakota. While the collapse of the acquisition program is apparent,[16] a total of six new municipal enterprises originated between 1930 and 1932 to bring about a net increase of five plants at the close of the two-year period and a reversal of the former downward trend.

Unlike its neighbors to the north, Kansas continued to relinquish munici-

[15] Ninety-one of the total acquired were in towns under 1,000 population and 77 of these were in towns of less than 500 population.

[16] Only one out of 21 changes occurred in the last two years.

pal enterprises to private control in the past two years, selling 26 establishments to lead the states for this period.

There were no originations of new municipal enterprises in 21 states (including the 10 states in the New England and East South Central geographic divisions). Nine additional states show only one origination. In contrast, five states registered no changes from municipal to private ownership in the five-year period and six showed only one such change. Twenty-four states had no originations within the last two years and 16 were without changes from municipal to private ownership in the same period.

Technical Character of the Plants Involved

One further question is of current interest. Have these originations and changes to private ownership been primarily distributing establishments purchasing their power at wholesale or have they been isolated generating units? And of the latter, what part has been played in the changes by Diesel oil engines?

Of the 90 new instances of municipal ownership in the five-year period, nearly ½ (43) were generating establishments, while 47 began as distributing enterprises only (Table VII). Of the 43 generating plants, 35 are known to have started with oil-engine equipment and of these 14 are known to have started in competition with an existing privately owned enterprise. Two began with hydro-electric equipment, one of which (Hood River, Oregon) generates for street lighting only.

These relationships take on more significance when considered separately for the first three years and the last two years of the period. There were only 24 originations in the first three years[17] but 20 of them began as generating all or part of output. Of the 20 generating plants, 19 were Diesel-engine installations and one a hydro-electric plant. Of the Diesel plants, nine began in competition with an existing privately owned enterprise and the single hydro-plant (Crisp County, Cordelle, Georgia) also began in competition with a private company. Thus, although the number of new municipal enterprises originating in the first three years was small, the percentage of generating plants to the total originations was high (83%) and the percentage of generating plants beginning in competition with existing private plants was also high (50%).

TABLE VII. NUMBER OF MUNICIPAL ESTABLISHMENTS ORIGINATING AND NUMBER CHANGING TO PRIVATE OWNERSHIP, CLASSIFIED AS TO TECHNICAL CHARACTER AT THE TIME OF ORIGINATION AND AT THE TIME OF CHANGE TO PRIVATE, BY PERIODS, 1927–1930 AND 1930–1932.

	1927–30	1930–32	Total
Number Originating as			
Generating establishments.	20	23	43
Purchasing establishments.	4	43	47
Total.....	24	66	90
Number Changing from Municipal to Private Ownership			
Generating establishments	178	40	218
Purchasing establishments*	330	79	409
Total.....	508	119	627

*Including private leases of municipal plants.

Of the 66 new municipally owned enterprises established in the last two years, only 25 were generating plants, of which 16 were powered by Diesel engines. Only five began in competition with existing privately owned enterprises but all these were Diesel engine plants.

Thus, while the last two years seem to mark a revival of interest in municipal

[17] In addition, 10 municipally owned purchasing establishments changed from purchasing to generating all of output in this three-year period.

ownership as expressed in terms of number of new enterprises (66 in the last two years as compared with 24 in the previous three years), the influence of the Diesel engine in the revival seems to have subsided in the latter period. There were fewer Diesel plants installed in the last two years and only half as many installed in competition with private companies. In the first three years the originations were dominated by the Diesel engines, whereas in the last two years nearly ⅔ of the originations were purchasing establishments. In spite of the smallness of the sample, it indicates that the renewed interest in municipal ownership really started prior to 1931 in certain sections of the country as evidenced by the percentage of competitive installations in the first three years.[18] It also indicates that the economic collapse of the past two years has probably had some effect on the ability of municipalities to finance generating plant installations but has been a lesser barrier to the establishment of a municipally owned distribution system where wholesale power was available. Furthermore, as already pointed out in Tables III and IV, the originations in the last two years were, in general, in smaller communities than in the previous three-year period.

Turning now to a consideration of the changes from municipal to private ownership, we find (Table VIII) that 34% (218) of these changes in the five years were generating establishments, 17 were instances of municipally owned plants leasing to a private company, and the balance were distribution systems only. Referring to Table VIII we find 59% (128) of the 218 generating plants changing to private ownership were using oil engines only and 13 more were using oil engines in combination with some other type of prime mover. Thus, the oil-engine plant, which seems to be providing the principal competitive threat to private capital in new municipally owned electric light plants,

TABLE VIII. NUMBER OF MUNICIPAL GENERATING ESTABLISHMENTS CHANGING TO PRIVATE OWNERSHIP, CLASSIFIED BY TYPE OF PRIME MOVER IN USE AT THE TIME OF CHANGE AND BY PERIODS, 1927–1930 AND 1930–1932.

Type of Prime Mover in Use at Time of Change to Private Ownership	1927–30	1930–32	Total 1927–32
Total—All Types	178	40	218
Oil engine	107	21	128
Oil engine and another type	11	2	13
Gas engine	15	3	18
Steam engine	35	5	40
Water wheel	8	5	13
Steam turbine	2	4	6

fared rather badly in the resistance shown to private acquisition. The Diesels seemed particularly vulnerable to private acquisition in the oil territory of the Central and South West, where cheap fuel would seem to give this engine additional competitive advantages as compared with similar installations in other territory. Thus, of the total of 141 Diesel engine plants changing to private ownership, 64 were in the states of Oklahoma, Texas, Louisiana, Mississippi, Kansas and Nebraska, or 78% of the 82 generating plants changing to private ownership in these six states.

Since the oil engine has been so widely advertised for isolated plant operation, it is hardly satisfactory to allow the above rather damaging statistical data to stand without a glance at the size of community in which these oil-engine fatalities occurred. Without burdening

[18] For example, of the seven new municipal plants in Texas, five began in the period 1927–30 with Diesel engine plants in competition with existing private installations. These were Commerce, 1929; Farmersville, 1930; Seymour, 1929; Spur, 1929; and Teague, 1929.) Caldwell began in 1931 with a Diesel plant in competition with a private plant. Yoakum began in 1931 as a generating establishment but data as to competition are lacking.

the reader with a detailed analysis by sections of the country, it seems sufficient to point out that of the 107 oil engine plants changing to private ownership between 1927 and 1930, 77% (82) were in towns of less than 1,000 population (Table IX). There is evidently such a thing as territory below the margin of profitable operation for isolated

TABLE IX. NUMBER OF MUNICIPALLY OWNED OIL ENGINE GENERATING PLANTS CHANGING TO PRIVATE OWNERSHIP, DISTRIBUTED BY SIZE OF COMMUNITY AT DATE OF CHANGE, 1927–30 AND 1930–32.

Size of Community	1927–30	1930–32
0– 499	45	6
500– 999	37	5
1,000–1,499	12	2
1,500–1,999	6	....
2,000 and over	7	8
Total	107	21

Diesel engine plants, either publicly or privately owned, just as there is such a marginal limit to profitable transmission line extensions. [19] High pressure sales by manufacturers in territory which cannot pay the costs of such installations hinder the cause of municipal ownership more than they help it.[20]

Conclusions

The limitations of statistical data of the character included here as bases for indicating the past or predicting the future trends of municipal ownership are recognized by the writer. However, they have a certain value as factual data in a field of study marked by the scarcity of such information and the interpretations included in this study are believed to be justified within the limits noted. However, in a period when the interpretation of statistical data such as those shown here is muddled by unusual economic conditions, forecasting is not justified. The stagnation in the field of private acquisitions of municipal plants in 1932 and the reduced number of newly established municipal plants in the same year from the originations of 1931 give ample indication that both public and private entrepreneurs have withdrawn from active trading in the municipal ownership market pending more favorable financial weather. The fact that some 50 new municipally owned enterprises were established in 1931, whereas in the previous three years an average of only nine per year were established, may give some indication of the activity which may be expected when the financial skies have cleared. A clearing up of the general debt dilemma of municipalities would seem to be a necessary preliminary to any marked increase in the number of municipal enterprises established in the future. The problem is, of course, linked closely with the state constitutional debt-incurring provisions and with the complicated and widely differing charter provisions of municipalities.[21] Legislative activities in the direction of liberalization of these legal

[19] In an empirical determination of the survival plateau of municipally owned plants of the United States, this margin has been found to be approximately 500 horsepower, corresponding to towns of from 1,500 to 2,000 population, although this varies for different sections of the country and for different types of prime movers. (See Raver, *op. cit.*, Ch. VI, "The Case for the Isolated Plant.")

[20] A recent example of the failure of a Diesel engine plant established in a town too small to support the cost of operation appeared in the March 23, 1933 issue of the *Iron County Record* (Utah). According to this publication, the town of Kanab, Utah, purchased a Diesel engine plant under an installment plan whereby the company selling the engines held title to the equipment until the plant was paid for. The revenues proved insufficient to maintain the monthly payments and the plant was sold to a private company in March, 1933. The population of the town at the *1930 Census* was 1,195.

[21] See Durisch, Lawrence L., "Publicly Owned Utilities and the Problem of Municipal Debt Limits, 31 *Michigan Law Review* 503–11 (1933). See also "State Constitutional and Statutory Law Affecting Municipal Ownership of Public Utilities," a summary of citations for all states as of January 1, 1931 (Chicago: Institute for Economic Research, 1932).

barriers has been evident in the legalization of public power districts enabling inter-municipal cooperation. Even this remedial legislation, should it be continued, will not release the public bodies from financial stress (unless the self-liquidating project provision of the Reconstruction Finance Corporation offers some release)—especially if the burden of unemployment relief continues to rise. And relief from financial stress would appear to be necessary before further extensive investments in municipal plants or power districts can be undertaken.

Under such circumstances the data presented here may suggest a variety of interesting possibilities, none of which can be put down as definitely predictable under present conditions. The issue, nevertheless, is a live one, as indicated by the very considerable activity in this five-year period with the exception of 1932 and it is believed that the data presented here fill a gap in the information necessary for a complete study of the problem. Indeed, the 1932 inactivity may be entirely illusory. The lack of tangible results in this one year does not necessarily mean that municipal ownership agitation has not been intensified. The legal and economic difficulties indicated above are sufficiently well known to offer an explanation of present stagnation of activity.

Oil Proration: An Analysis and Evaluation

By GEORGE WARD STOCKING

MORE than a decade has elapsed since the geologists sounded their note of warning regarding the imminence of a petroleum shortage and since the fear was spread throughout the land that our domestic petroleum supply would soon be inadequate to meet our rapidly expanding requirements for petroleum products. The shortage scare served to intensify the activities of our State Department in insuring protection to our property holders abroad and "fair play" in the exploitation of foreign petroleum resources. It likewise gave origin, though not form, to a conservation movement. Its most important tangible achievement was the creation by executive order in December, 1924, of the Federal Oil Conservation Board, consisting of the Secretaries of the Interior, Commerce, War, and the Navy. It also served to acquaint the public with the extravagantly wasteful manner in which our domestic reserves were being exploited. The oil industry's response to these charges of widespread waste was the denial of its existence. The Committee of Eleven of the American Petroleum Institute assured us not only that avoidable waste in the oil industry had been eliminated but that if control of the industry were left to the free play of competition, petroleum would continue to be supplied to the country in quantities adequate to meet the essential needs of industry. The danger which confronted the industry was conceived to be not that of shortage, but that of restrictive government regulation.[1]

The industry's promise of an adequate petroleum supply has been abundantly fulfilled during the intervening years. In truth, the industry has been threatened with being submerged by the flood of oil it has let loose upon the land. Although total production in the fields of the United States in 1919, when the shortage scare was near its height, was only 378,367,000 barrels, a decade later domestic output reached the unprecedented figure of 1,007,323,000 barrels. Meanwhile world production had increased from 555,875,000 barrels in 1919 to 1,485,829,000 barrels in 1929, and domestic stocks of crude and refined products from 196,135,000 barrels to 689,166,000 barrels—truly a flood of oil which, from the industry's point of view, had taken on the "proportions of a national disaster."[2]

Recent Developments in the Oil Industry

Chief among the factors which have enabled the industry to fulfill so lavishly its promise of an adequate oil supply have been improvements in the technology of oil finding, oil drilling, oil recovery, and oil refining. During the first three-quarters of the oil industry's existence oil discovery depended largely upon the fortuitous activities of the picturesque wildcatter, relentless in his search for liquid gold. Although the speculative factor has been by no means entirely eliminated from the business of oil finding, during the past two decades chance has yielded much ground to the irrepressible advance of science.

[1] See *American Petroleum Supply and Demand*, a report to the Board of Directors of the American Petroleum Institute by a Committee of Eleven Members of the Board (New York, 1925), pp. 3–5.

[2] Production data are from the U. S. Bureau of Mines.

To this advance both geology and physics have contributed much. Mapping of surface structures by geologists as an aid in oil finding has been supplemented by geological sub-surface work based on the findings of the diamond-core drill. Geophysical developments, the use of the seismograph, the torsion balance, and the magnetometer have likewise assisted greatly in determining where oil is or is not likely to be found. As petroliferous regions have been delimited with greater accuracy, improvements in the technique of drilling have made it possible to recover oil from depths which a few years ago were beyond the limits of practical engineering. Fifteen years ago about 4,000 feet represented the maximum depth for economical oil recovery; today numerous wells are producing at depths of more than a mile and some from approximately 9,000 feet. Depth no longer daunts the oil field engineer.

Concomitant with such developments have been improvements in oil recovery methods. Fields long since regarded as nearing exhaustion have been made to yield increasing quantities of oil through repressuring with air or gas or through water flooding. In new fields, as the function of gas in oil recovery has come to be better understood, a more efficient utilization of original gas pressure has increased the output and prolonged the lives of individual oil wells and pools. These various influences are reflected in an increase in daily average per-well output from 4.9 barrels in 1921 to 8.4 barrels in 1929. Of equal importance in creating a surplus of oil have been improvements in refinery technique. Not only has more oil been produced than ever before, but advancements in the art of refining have made available oil go further. More general utilization of the cracking process in the refining of the crude product is largely responsible for an increase from 26% in 1918 to 46.6% in 1930 in the percentage of gasoline recovered.[3] These developments, technological in character, resulted in a continued increase in stocks during the decade 1919-1929 (save for the year 1926) despite a tremendous increase in the demand for petroleum products. In a period of unprecedented prosperity they prevented large, fully integrated oil companies from realizing their full profit potentialities and they kept many smaller independents close to the edge of bankruptcy. During a part of this period the oil industry presented a picture of outright demoralization.

Conservation through Proration

Although the fear of shortage 15 years ago was unable to give form to a conservation program, the fact of surplus has today achieved that happy end. The so-called conservation movement in the oil industry, which has now become world-wide in scope, has taken the form of control of output. It is known as a program of proration. It involves the determination of an allowable daily production and the distribution of that allowable amount among the various producing units to which the program is applied. It is not a product of the current economic crisis, although its machinery has been greatly perfected and its scope of application widened as a result of world-wide depression. It seems initially to have been occasioned by, and applied to, the flush production of new fields which threatened to break the market. In October, 1926, the Greater Seminole field of Oklahoma, with only 37 wells completed, had a daily production of 81,000 barrels. With

[3] U. S. Bureau of Mines, *Mineral Resources of the United States, Petroleum*, 1923, p. 424, and 1930, p. 873.

a break in the price structure imminent, machinery for the limitation of production to market outlet was set up under the leadership of the major oil companies. An operators' committee was organized and an umpire was hired by the committee and paid for by the producers. The primary function of the umpire seems to have been to bring about harmony of action in restricting output. These efforts met initially with only a slight measure of success. Although there were temporary shutdowns and restrictions on dates of well completions, by August 9, 1927, Seminole daily production had increased to 527,400 barrels from 637 completed wells and the price of 36° gravity Mid-Continent crude oil had dropped from $2.29 to $1.28 per barrel.[4] At this time appeal was made to the Corporation Commission of the State of Oklahoma that it exercise the powers bestowed upon it by legislative enactment of February 11, 1915, to prorate output within a given pool among the several producers when limitation was necessary for the prevention of wasteful production. This urgent appeal from operators whose profit position was daily growing more precarious apparently made the Commission realize its responsibility in the matter of oil conservation. Lacking funds with which to establish independently its own instrumentality of proration, the Commission utilized the machinery already created by the operators of their own volition and put the power of the State's conservation agent behind it. But surplus oil output was not limited to Oklahoma. While these developments were taking place in the Greater Seminole field of Oklahoma, somewhat similar developments occasioned by somewhat similar circumstances were taking place in certain fields of Texas. By October, 1927, a workable proration program had been applied to the Yates pool in West Texas and in the following year to the Winkler County pool.[5]

As the potentialities of proration, when backed by the authority of state conservation agencies, came to be more widely appreciated both as a price regulating and as a conservation program, other fields were subjected to a similar discipline. Before the devastating days of October, 1929, ushered in the current world depression, proration had been developed as a mechanism for controlling output in an industry which had been allowed to run wild for more than half a century. Despite proration in numerous fields, total United States production increased during 1929; this increase did not prove disastrous, however, because it was accompanied by an increase in consumption and an increase in prices. The upward trend in prices was sharply reversed in 1930; by October of that year 36° gravity Mid-Continent crude sold for only 92 cents per barrel.[6] Accompanying these developments, the demand for coordinated control of output on a state-wide basis made its appearance. In truth, early in 1929 the State Corporation Commission issued a proration order applying to all flush-production fields of the State of Oklahoma. During August, 1930, the first state-wide proration order was issued by the Railroad Commission of Texas, the conservation agency of that State. In California, where organized curtailment was first instituted in October, 1929, in the Santa Fe Springs and Long Beach fields, state-wide proration was achieved

[4] *Oil Weekly*, January 31, 1930, pp. 64–65.

[5] For a comprehensive discussion of the development of proration in Texas, see Conrod, R. L., *State Regulation of the Oil and Gas Industry in Texas*, M. A. thesis, 1931, University of Texas Library, Austin, Texas.

[6] See *Oil Weekly*, January 30, 1931, p. 196.

by the early part of 1930. Before the close of that year these three major oil-producing states, accounting for approximately 82% of the total domestic output, had established machinery designed to hold output to "market requirements."

The Machinery of Proration

Although the machinery differed in detail in the several states, in its fundamentals it was the same. It involved the creation of a central proration committee for the state, composed of representatives of the oil operators, whose function it was to determine the market outlet for crude oil for a specified period of time. This "allowable" represented the total amount which pipeline and purchasing companies, canvassed for the purpose, had indicated a willingness to purchase from the various pools of the state *at existing market prices* during the specified period. This specified allowable for particular pools was then prorated among the several wells or leases of the pool on a basis of the relationship of the potential of the well or lease to the total potential of the field. As the plan was applied in Texas, after the allowable for the State and the various pools had been determined by the Central Proration Committee on a basis of "market outlet," the Railroad Commission of Texas conducted open hearings in which testimony was introduced to establish the fact that, if production were not cut to the proposed figure, physical waste would ensue in the production of petroleum. After the establishment of such facts through expert testimony introduced for the purpose, the Commission issued a proration order allocating an allowable output to the various pools of the State. Where testimony regarding the amount of oil which might be produced without waste in a particular pool was contradictory in character, the Commission was the final arbiter as to the amount which might be allowed. After the Commission's order had been issued, the determined allowable for particular pools was then prorated to the various producing units, on a basis of their relative potentials, by an umpire and local supervisory committee created for the purpose.[7]

The Response to the Proration Program

Such, in brief, was the proration machinery as it had developed by the close of 1930. It did not prove a completely satisfactory device for adjusting output of petroleum and its products to consumption requirements. Refining capacity being continuously in excess of petroleum produced, competition among refineries anxious to cut down the burdensome overhead of excess plant capacity furnished a demand for a larger volume of crude petroleum than the market for gasoline warranted.[8] Forced to dispose of their major refined product, gasoline, at whatever price it would bring or to store it at a continuing cost, refiners developed outlets for their surplus through other than the well-estab-

[7] This analysis of the manner in which proration has operated in Texas is based on mimeographed material secured from a former technical advisor of the Central Proration Committee and upon personal observation through attendance at numerous open hearings conducted by the Texas Railroad Commission. For a description of the proration machinery set up in Oklahoma, see "Brief for the Appellant, Champlin Refining Company, in the Supreme Court of the United States," October term, 1931, Docket No. 485, *Champlin Refining Company v. Corporation Commission of the State of Oklahoma*, pp. 10–13.

[8] The "throughput" of all refineries in the United States in 1930 was only 74% of the rated daily capacity of those plants in operation at the close of the year, although 1930 established an all-time record for domestic gasoline consumption and an all-time record for gasoline in storage. For a discussion of overexpansion in refining capacity, see Petty, Edward C., *Developments in the Petroleum Refining Industry as Related to Overproduction of Crude Oil* (University of Oklahoma Press, 1931).

lished channels of distribution. Hence, the appearance of so-called "bootleg" gasoline in increasing volume. Hence, also, an unstable and frequently demoralized gasoline market. State-wide proration on a basis of market outlet for crude petroleum proved inadequate as a stabilization measure. To remedy its shortcomings, two additional steps were taken. First, voluntary committees on petroleum economics were created, one by the American Petroleum Institute and one by the Federal Oil Conservation Board, for the purpose of analyzing the statistical position of petroleum and its products, estimating the probable demand for gasoline, and indicating the amount of crude oil essential to meet these requirements. Second, the activities of the major producing states were coordinated through the Oil-States Advisory Committee, created in the spring of 1931 and representing 10 of the major producing states. This Committee, together with the so-called Tri-State Committee, functioned sporadically throughout the remainder of 1931, although by the end of the year the Texas Railroad Commission had manifested a reluctance to participate in coordinated reduction of output in the face of a state law specifically prohibiting its use of power as a conservation agency in the elimination of so-called "economic" waste as distinct from "physical" waste. Despite the announced default of Texas, the proration work undertaken by the Oil-States Advisory Committee as an agency for coordinating the proration activities of the several states seems to have continued; meanwhile, the intrastate proration program of the State of Texas has been brought more definitely under the supervision of state agencies and is less completely, or less obviously, in the hands of the operators. This has been effected through the enactment of new regulatory emergency measures, one in the summer of 1931 and the second in the summer of 1932. The latter specifically authorizes the Railroad Commission to take account of "market demand" in applying its proration program.[9]

This legislation was made necessary by an unexpected flood of oil from the flush production of the recently discovered East Texas field, now the largest oil field in the world. The imminent collapse of proration in the face of unprecedented developments in East Texas was prevented in the summer of 1931 by prompt action on the part of the Legislature and by the Governor's having declared a state of martial law. The Governor found precedent for his policy in the action of the Governor of Oklahoma in placing the Oklahoma City oil pool under martial rule a few weeks earlier.

Not only has proration experienced a stormy career by reason of turbulent conditions within the industry, but the reefs of legal entanglement have at times threatened its shipwreck. The atmosphere was temporarily cleared, however, in the spring of 1932 when the Supreme Court of the United States in *Champlin Refining Company* v. *Corporation Commission of the State of Oklahoma, et al.*, a case raising indirectly the question of the legality of the whole Oklahoma proration scheme, held that the orders of the Corporation Commission were not "issued for the purpose of fixing the price of crude oil," nor have they had that effect; that on the contrary they represent an appropriate exercise of the Commission's power to prevent waste in the production of oil for the protection of the correlative prop-

[9] See Ely, Northcutt, *The Oil and Gas Conservation Statutes* (annotated), Washington, 1933, pp. 371 *et seq.*

erty rights of the owners of a common underground pool of oil.[10] This decision, although based upon the unwarranted assumption that the demand for petroleum is rigidly inelastic in character and hence that there is some definite amount of oil which can be produced and disposed of without the appearance of physical waste, seemed to clarify greatly the legal aspect of proration.[11] Meanwhile, however, the legal status of proration has been rendered more insecure by the decision of the District Court of the United States for the Eastern District of Texas in *People's Petroleum Producers, Inc.* v. *Lon A. Smith, et al.*, rendered on October 24, 1932. In this case, although the Court found nothing invalid in the Texas conservation statutes, it held that the proration orders of the Railroad Commission as applied to the plaintiff's properties in East Texas were unjust and confiscatory in character.[12] Subsequent orders of the Commission have been similarly characterized and the Railroad Commissioners have been cited to appear before the Court on April 8th to show cause why they should not be held in contempt for "attempting to evade the orders and decrees" of the Court. Subsequently, pending the running of tests in an effort to determine a basis of proration which might be held legal, the East Texas field was closed down on April 6th.

Despite legal interference, by the end of 1932 the average daily production of the United States had been curtailed from over 2,950,000 to 2,100,000 barrels within a period of three years and storage had been depleted by approximately 80,000,000 barrels.

Oil in Foreign Trade

But oil production is not entirely an American enterprise. True it is that American output has accounted for approximately 70% of the world's total since the inception of the industry and that it accounts for approximately 62% of the current yield. Foreign output,

[10] *Supreme Court Reporter*, Advance Sheets, June 1, 1932, pp. 559–568.

[11] The broad issue involved was the legality of proration as it had developed in Oklahoma. The Court's decision seems to have rested on two lines of reasoning. First, that in the absence of *proportional* taking, "operators who do not have physical or market outlets are forced to produce to capacity in order to prevent drainage to others having adequate outlets." Here is obviously the scarcely warranted assumption that in response to lower prices of crude which increased production would entail, adequate additional storage facilities and market outlets would *not* appear. It is an unsupported assumption of an inelastic demand for petroleum. Were facts presented in a subsequent case establishing the contrary assumption, that in response to lower prices market outlets would be found adequate to avoid physical waste in the handling of the oil, the Court might be forced to change its position. The Court's second argument seems no more justified. "Uncontrolled flow of flush or semi-flush wells for any considerable period exhausts an excessive amount of pressure, wastefully uses the gas, and greatly lessens ultimate recovery." Concerning the truth of this statement technical experts will disagree. The basis of disagreement will generally be found to rest upon whether the "experts" are paid to hold opinions in such matters by those whose interests lie in proration or in non-proration. Whether or not uncontrolled production actually will result in lessened ultimate recovery is primarily a technical engineering question, not an economic one. It will depend largely upon underground geological and physical conditions. There is reputable, unbiased opinion which holds that *proration* as it has been practiced in East Texas, in the light of the underground geological and physical conditions which exist there, will result in lessened ultimate recovery.

[12] The basis of this decision seems to have been the method of proration applied to the East Texas field. The proration order complained against permitted equal takings from each well in the field irrespective of its location. The Court found that the Commission had never made experiments, tests or inquiries to ascertain the greatest amount of oil which each producer might take from his wells without injury to the field and that its per-well requirement "arbitrarily, unjustly and in a confiscatory way" distributed the "allowable" so that the "oil of the plaintiffs, situated, as they were, most favorably on the structure" was given to others not so favorably situated. (1 Federal Supplement 361.) Had production per well been based on each well's relative potential output, as in the Oklahoma case, the Court might have ruled differently.

nevertheless, is more than adequate in amount to render futile the industry's stabilization efforts when directed toward American output alone. The attack on the foreign problem has been twofold in character. It has involved a demand for a protective tariff designed to shut out oil imports, a demand sponsored and put through by the so-called independents of the industry, and the extension of the principles of proration to all oil-producing countries of the world, a program sponsored and executed under the leadership of the large integrated concerns operating on a world-wide scale.

During the past decade the United States has been a persistent importer of petroleum and its products. Although the general trend of such imports for the whole period has been downward, the last few years have witnessed a reversal of this tendency. Imports of both crude and refined products have recently been on the upswing as a result, primarily, of Venezuela's increasing production. Venezuelan refined and crude products have been replacing Mid-Continent and Texas crude in the Atlantic coast market. It is against such competition that the tariff efforts of the independents have primarily been directed. Alleging that the stabilization efforts of the industry have been nullified by mounting importations, the independents have continued their attack with increasing vigor until the incorporation of an import duty on crude oil and refined products into the Revenue Measure of 1932 crowned their efforts with success.[13]

As the independents have fought their fight to close the American market against the foreign product, leaders of the integrated concerns operating on a world-wide basis have intensified their efforts to set the world's house in order. Roumanian and Russian oil have been the major disturbing elements in the world situation. Roumanian production has been highly competitive in character and, as world output has declined, Roumanian oil has pushed its way into more distant markets. Russian output has experienced similar expansion. The five-year plan envisaged and achieved a sharp increase in oil output, an increase necessary directly to meet the expanding needs of the Russian domestic industry and indirectly to facilitate the foreign purchases essential to the program of industrialization. Price stabilization in the world's oil markets, particularly in Europe and the East, had been impossible of achievement in the face of Russian and Roumanian competition. In an effort to stabilize the world output, a world petroleum conference was convened in New York in May of last year. Although negotiations were carried on in an atmosphere of good will and harmony, no plan satisfactory to both the Russian representatives and the leaders of the industry who had called the conference was evolved. Apparently, Russian refusal to accept the proposals of the industry was occasioned by an unwillingness to abandon the distribution machinery which Russia had established abroad in exchange for an agreement on the part of the large world marketers to purchase a specified amount of Russian oil annually. Nor does there seem to have been a meeting of minds regarding the size of the annual purchases. The conference adjourned to meet in Paris on June 30, 1932.

[13] The law levies an import duty of ½ cent per gallon on imported crude, 2½ cents per gallon on imported gasoline, and 4 cents per gallon on imported lubricants. The tariff on lubricants compensates for an excise duty of like amount on lubricants of domestic manufacture, and 1 cent of the gasoline import duty compensates for a similar excise duty. It seems unlikely that these duties are high enough to shut out all imports and the demand that they be increased has already been raised.

At the Paris conference no representatives of the Russian industry participated officially, and the conference seems to have been directed primarily toward the stabilization of Roumanian output. The Paris conference met with greater success than its predecessor. Not only was the general principle of "stabilization . . . by reciprocal engagements to respect relative positions as regards exportations" agreed upon, but a specific allotment for immediate Roumanian production was determined (subject to subsequent ratification by Roumanian producers) and a somewhat flexible quota plan was adopted designed to insure uniformity of action with regard to price changes, to take account of future fluctuations in demand, and to adapt Roumanian and world production thereto. By such means was world stabilization of oil production tentatively achieved.[14]

Evaluation of the Proration Method

By way of conclusion, le[t] us briefly evaluate this achievement. As regards the tariff on oil and its products, it should be pointed out that throughout the entire period of overproduction we have been a net exporter of petroleum and its products. To the extent that petroleum prices are competitively determined, they are determined in a world market. A tariff may redirect the flow of such products; it is not likely to affect the volume. Foreign oil has demonstrated its potentialities in replacing American oil on the Atlantic coast without the obstacle of a tariff; if denied access to the American market, it can and will take the place of the American product abroad. It is only as an adjunct to a proration program that the tariff can have any considerable influence upon the price of the American product. With such an adjunct, American output might be restricted to American needs and domestic proration might achieve a very considerable success as a price stabilizer or price raiser.

Indeed, this end, higher prices, was temporarily achieved during 1931–32 through proration and voluntary restrictions on imports. The prices of Mid-Continent crude oil at the end of the first half of 1932 were over twice those of a year previous and five times the lows of 1931. The f. o. b. Gulf terminal price of 65 octane gasoline had increased from three and a fraction cents per gallon to slightly less than six cents during the same period, and the trend of retail gasoline prices was likewise upward.[15] This development had been made possible by a reduction in average daily production of crude oil below average daily consumption and by an inroad on stocks. As a result, in part, of a further decrease in gasoline consumption as automobiles have been junked or stored, in part, of a violation of proration rules in East Texas since the state militia have been withdrawn with a production of crude in excess of allowable,[16] in part, of the lower Federal Court's decision in *People's Petroleum Producers, Inc.* v. *Lon A. Smith, et al.*, and the general confusion which these developments have occasioned, the upward price trend has been sharply reversed in recent months and the whole proration program has become more unstable. As prices have declined, the opposition of small inde-

[14] See *Oil and Gas Journal*, July 28, 1932, p. 11.

[15] See Mayo, E. W., "Progress and Problems of the Oil Industry," *World Petroleum*, November, 1932, pp. 455–458.

[16] Figures of the Railroad Commission on refinery stocks and tank car and pipeline shipments indicated an average daily production for February, 1933, in East Texas of approximately 90,000 barrels in excess of allowable. Some of this was produced under injunction against the Commission, whose orders had been held invalid.

pendents to the program has become more intense and there is an organized movement for its abandonment. What the outcome will be is uncertain. There seems to be little doubt, however, that restriction of output through collusive action has exacted of the consumer higher prices for gasoline than would have prevailed under genuinely competitive conditions.[17] Inasmuch as the gains to the industry from higher prices have been at the expense of approximately 25 million automobile users, many of whose incomes have been small, proration would seem to have exercised a retarding influence upon general business recovery by concentrating purchasing power in the hands of the few at the expense of the many.

As regards proration as a conservation measure, it may be said that, although our analysis of the circumstances under which a proration program has been created and of the manner in which it has been carried through indicates clearly that a major object of proration has been stabilization of output and control of price, it seems probable, although not always certain, that in a number of instances oil proration has contributed to a more efficient extraction of underground oil. The extent to which this is true has depended somewhat upon the manner in which the program has been applied, and this has varied from pool to pool. On the whole, however, to one familiar with the technology of oil production and current practices in the application of proration, the opinion of the lower Federal Court in *MacMillan* v. *The Railroad Commission of Texas*—namely, that such effect as the proration orders of the Commission "might have to prevent not economic but physical waste . . . is a purely accidental incident thereto"—is impeccable.[18] It seems not to require the opinion of an expert to conclude that an arbitrary restriction of output to market demand and its division among competing producing units can only incidentally or accidentally insure an efficient utilization of the natural expulsive forces—gas and water under great pressure—which bring oil to the surface. Quite clearly, such a program is at best but a quasi-conservation measure.

This conclusion seems abundantly borne out by the facts. On October 31, 1930, the latest date for which figures are available, total daily waste of raw gas in the State of Texas equalled 467,753,000 cu. ft. This amount was permitted to blow into the atmosphere as an incidental waste of oil production.

[17] There are those who might dispute this contention. Dr. Joseph E. Pogue, for example, in an article entitled "Economics of the Crude Oil Potential in the United States," *International Petroleum Technology*, March, 1931, pp. 24–27, contends and endeavors to prove statistically that proration has proven to be a failure as a price-regulating device because it has permitted the building up of a potential output which has the same character of influence on prices as do actual stocks. Despite its show of statistical accuracy, Pogue's analysis is not altogether convincing. Its chief defect is that it assumes competition in the production and sale of crude oil. State-controlled output institutes monopoly conditions in the production of oil. Increased potentials which are not permitted to become realized output can influence prices only to the extent that they threaten a breakdown in the established control. Control of output which raises prices will encourage additional drilling and this may serve to build up potential, thereby serving to make control of output more difficult. The case of oil is not, however, strictly analogous to that of coffee or rubber, in which stabilization efforts have proven so disastrous. The chief element of difference is that one cannot at will increase oil output as one can that of coffee or rubber. Oil must be found before it can be captured and chance plays a big role in the successful outcome of an oil hunt. Successful strikes would no doubt complicate the problem of control and might bring on the collapse of the system. Actually, as demand for fuel products has continued to decline and violations of proration have become more frequent, a clamor for the abandonment of proration has become more persistent on the part of independent producers.

[18] *MacMillan v. The Railroad Commission of Texas*, in the District Court of the United States for the Western District, Austin Division, No. 390 Equity.

An additional wastage of 595,562,000 cu. ft. was permitted after gasoline content had been extracted.[19] Comparable figures for other states are not available, but according to an estimate of last year by the Oklahoma Corporation Commission, the Oklahoma City field alone was currently wasting about 203,000,000 cu. ft. daily. Under a genuine conservation program virtually all this gas could have been utilized for repressuring purposes with a tremendous increase in ultimate recovery. As proration has been applied to East Texas and output has been cut from over 1,000,000 barrels a day to less than 250,000 barrels, the number of producing wells has increased from 1,625 to 9,600, involving an increase in developmental expense of well above $100,000,000.[20] Thus has the "conservation" program afforded by proration resulted in an increase in developmental cost; but there is no convincing evidence that it will increase ultimate recovery in any corresponding manner.

A genuine conservation program must take as its point of departure the geological unit—the oil pool. Only by unified operation is an efficient utilization of the expulsive agents possible and only by such control can costs be kept at a minimum. This fact is well recognized by all those familiar with the technology and geology of oil production.[21] Perhaps the program of control set up by the industry and the state may prove a first step toward this end. If unit operation should be achieved, it obviously would call for more rigid control in order that the consumer's interest might be adequately protected.

[19] Data from the Oil and Gas Division of the Texas Railroad Commission.

[20] On February 14, 1933, there were 9,609 completed wells with a daily allowable of 26 barrels each. Data from the Oil and Gas Division of the Texas Railroad Commission.

[21] For a discussion of this problem, see Stocking, G. W., *The Oil Industry and the Competitive System* (Boston: Houghton-Mifflin Co., 1925), Chapters VII-X.

Forestry and Employment

By W. N. SPARHAWK

ADVOCATES of increased public and private efforts in forestry have based their arguments chiefly on the necessity of providing timber supplies, protecting the soil, conserving water resources, or providing recreational opportunities and a home for wild life. Less has been heard of what may, perhaps, be the most important social service of forests, namely, their contribution to community welfare and stability through furnishing opportunities for useful employment and a means of livelihood to large numbers of people. This in itself would justify a great expansion in forestry, particularly in public forestry. It is not without reason that forestry—popularly referred to as "reforestation"—has recently been brought prominently into the picture as one means of relieving unemployment.

Forest Utilization Provides Many Jobs

Forest industries and those using wood as their principal raw material have long ranked high as employers of labor. Ever since the English colonists settled on the Atlantic coast, exploitation of America's forests has given employment to an important portion of the population. Not only were large quantities of wood used locally, but lumber, masts, staves, and naval stores quickly took a prominent place in the export trade of the colonies. Exports of forest products are still important, although the value of forest products imported is even larger. In 1909, when lumber production was near its peak, the lumber and timber products, pulp and paper, and naval stores industries together gave employment to more than 900,000 persons. This was the average number employed throughout the year; the number of different individuals actually employed during some portion of the year was considerably larger. Several hundred thousand additional were engaged in the manufacture of furniture, turned goods, toys, fixtures, and many other products made wholly or largely of wood. In 1930, approximately 1,300,000 persons were engaged in the forest products and related industries, in addition to those employed in the transportation and merchandising of forest products. This does not include the part-time work of some 2,500,000 farmers who got out wood and timber from their own land and worked it up for their own use or hauled it to market.

Although decreased output has caused a decline in number of workers, technological progress has not reduced employment in the lumber industry to as great an extent as in many other industries. It probably will not do so in the future, although some development along this line may be expected. The trend toward utilization of smaller timber, as the cut comes more and more from second growth forests, and toward more complete utilization of materials formerly wasted, may even bring about the employment of more men per unit area of productive forest.

Taking the country as a whole, the forest industries have maintained their position as a source of employment fairly well. They have not done so in many individual regions. The highly unstable character of the lumber industry has become traditional. As a rule, the industry has migrated from one

locality to another within a given region and from one region to another as timber supplies were depleted. Naturally, this industrial instability has brought economic and social evils in its wake. Cutting out of the forests and closing down of sawmills and other forest industries has commonly been followed by decadence of communities, decrease in population, loss of investments in homes and other property, failure of agriculture which was largely dependent upon the forest industries, lowered standards of living, and such a reduction in public revenues as to necessitate either curtailment of essential public functions or subsidies from state treasuries.

Managed Forests Insure Stable Employment

Here and there, however, forest industries were established on a more permanent basis. This is particularly true in portions of the Northeast, where wood-working plants—usually relatively small—have been in continuous operation, and even in the same family, for several generations. In these localities the forests have been handled so as to remain continuously productive. The cut has been roughly equal to the growth, even though there has been little attempt at systematic forest management. The plants themselves are usually more than mere sawmills. Instead, they carry the wood through to finished products such as boxes, pails, furniture, toys, woodenware, and novelties of various kinds. Such plants employ several times as many workers per unit of timber consumed as do sawmills. The establishment of more of these factories in forest communities would tend to enhance local prosperity as well as to bring about better utilization of the forests and larger returns to forest owners. It cannot be done unless the forests are organized and handled so as to insure continuous local supplies of wood.

Well-managed forests will afford opportunities for the employment of a large number of persons, in a great variety of jobs. So long as such employment yields products or services which are useful and worth the effort expended, the creation of these jobs is justified from the social standpoint, even if they yield no profit. The primary job of establishing new forests or reestablishing old ones—reforestation by sowing or planting—is a relatively minor part of the whole forestry job. Nature, if given half a chance, will take care of regeneration on the major portion of the forest land, except that which has already been denuded. A great deal more work is involved in caring for the growing forests, in harvesting and utilizing their products, and in constructing physical improvements that will facilitate administration, protection, and utilization. Instead of diminishing, the opportunity for employment increases as a forest passes from the regeneration stage toward maturity. After the timber is cut, employment abruptly decreases, then gradually rises again as a new forest grows up. In a forest managed on a continuous-yield basis all the various operations will be going on in some part of the forest each year. Under these conditions there will be no cycle of unemployment followed by a period of intense activity. Instead, the volume of employment will remain fairly constant.

In the countries of central Europe where forestry practice is fairly intensive, forestry and lumbering give employment at the rate of one full-time worker for every 100 to 125 acres of forest. Including transportation of forest products and secondary wood-using

industries, the rate is one worker for 30 to 50 acres. As a great deal of the woods work, such as planting, cultural operations, and logging, is seasonal, the actual number of workers is much larger. In Germany, for instance, from 1,500,000 to 2,000,000 different persons are employed in normal years in forestry, logging, and woodworking industries. Germany has only 31,000,000 acres of forest, or one-sixteenth as large an area as the United States. Her own forests, however, produce only about two-thirds of the wood that she uses. Most of the remaining one-third is imported in the rough and manufactured in Germany. In England, the Forest Commission estimates that forests in the planting stage require one full-time worker to 100 acres, and forests in the productive stage, one worker to 50 acres. Including hauling and wood manufacturing, fully productive forests can give work to one person for every 25 acres.[1]

It does not seem likely that American forests generally will be managed and utilized so intensively, at least not for many years. Examples of intensive, sustained-yield management are so few and cover so short a period that they do not afford a satisfactory basis for estimating employment possibilities. Such as there are, however, suggest that when the forests are fully productive they may give work at the rate of one man to 125 acres, with fairly intensive forestry; one to 200 acres with extensive forestry; and one to about 700 or 1,000 acres where the forest is left to itself, but protected from fire. Recent computations by the United States Forest Service indicate that it would be economically feasible for approximately 70 million acres of forest to be managed intensively, and about 280 million acres extensively, within the next few decades. It is also estimated that about 110 million acres additional, if merely protected from fire, will produce some timber. The aggregate yield of timber under these conditions should be just about sufficient to meet our normal requirements, including exports. On the basis of these areas and the ratios given above, the forests and forest industries would furnish employment for close to 2,000,000 persons on a full-time basis.

Forest Work as a Basis of Community Stability

But a great many persons engaged in forest work will not be employed on a full-time basis. Woods work, especially, is seasonal in character, and consequently is well adapted for part-time employment of farmers or other seasonal workers. In many localities, the additional income from forest work makes possible a standard of living higher than would otherwise be possible. The rural population in many localities in the Northeast, the Lake States, the Appalachian Mountains, and the South has always sustained itself in part by work in the woods or in wood-using industries. For example, in two mountain counties of West Virginia in 1928, two-thirds of the 2,200 farm operators derived a portion of their income from other than farm work. A large portion of this supplementary income came from work in the woods and forest products industries.[2] Similar conditions prevail in a large number of localities in most forest regions. Destruction of the forest and resulting loss of opportunities for

[1] Pritchard, H. A., "Labour in Relation to Forestry in Great Britain." Papers presented at the third British Empire Forestry Conference, Australia and New Zealand, 1928, pp. 589–600.

[2] Millard Peck, Bernard Frank, and Paul A. Eke, "Economic Utilization of Marginal Lands in Nicholas and Webster Counties, W. Va.," *U. S. Department of Agriculture, Technical Bulletin 303* (1932).

employment have brought great hardships to the inhabitants of these regions, and in many instances have forced them to seek a living elsewhere.

The proposal has sometimes been made that the inhabitants of such submarginal areas should be encouraged to migrate, and that the land should be permitted to revert to wilderness. Such a policy would be undesirable for several reasons. It would not appreciably relieve agricultural overproduction, because these farms contribute relatively little to outside markets. If the emigrants should engage in farming on better land elsewhere, overproduction would tend to increase. If they should go to the cities, many of them would help to swell the ranks of the unemployed. Moreover, it is exceedingly unlikely that the entire population of any considerable submarginal area could be induced to leave. If they did not, the weaker and less fit would tend to remain behind and rural slums would result.

Instead of getting people to seek employment on the outside, it would be far better to bring jobs to them. This can be done by building up the local forest resources and permanent industries. If it is done, it will bring prosperity to many rural communities. Many farms which would be submarginal if they had to depend on outside markets will be profitable if local markets are assured. Many thousands of families will be able to maintain their homes amid pleasant rural surroundings, instead of adding to urban congestion. The increased population and property values will make it possible for the local communities to support their schools, roads, and other institutions and will thus reduce the burden on the taxpayers of other portions of the states. The establishment and stabilization of rural industries and villages will create further opportunities for employment in the various industries which serve the rural population—such as merchandising, transportation, and professional services. The larger cities and trading centers of a region will derive benefits from the existence of a prosperous hinterland which they would never realize if the hinterland were a wilderness.

Forestry Work and Unemployment Relief

The discussion thus far has centered mainly on permanent employment. Another phase, and one which is much in the public eye at present, is the matter of emergency work to relieve unemployment. Under existing forest conditions much can be done along this line. It is possible, however, to overestimate the potentialities of forestry in the long run as a perennial source of emergency employment. Most of the operations in connection with forest development and management, once the forests are on a sustained-yield basis, cannot be expanded and contracted at will so as to take up the slack in other industries. Planting cannot be expanded quickly, because planting stock has to be grown in nurseries for one to four years before it is ready to set out. Once ready for planting, it cannot be held in reserve, for it is generally impractical to handle trees more than three or four years old. Slash disposal, where necessary, must be done soon after the timber is cut. Fire protection work depends largely upon seasonal conditions. Thinnings and improvement cuttings in regulated forests must follow a fairly regular schedule, and cannot be postponed until emergency employment is needed. Harvesting and manufacture of timber, like other manufacturing industries, is more likely to contract than expand in times of depression. Some temporary expansion in forest improvement and silvi-

cultural work will be possible at such times. It will give jobs to some of the unemployed from the forest industries, but will seldom be sufficient to take care of large numbers of workers from the cities.

In the present emergency, however, and for a number of years to come, there is abundant opportunity for expanding employment in forest work. Our forests are in a disorderly and depleted condition. To put them into decent shape will require a vast amount of work. Roads and trails and fire breaks will have to be built. Accumulations of slash and other hazards need to be eliminated. Breeding places of harmful insects and tree diseases should be cleaned up. Additional forest nurseries should be established. Large areas of denuded land require planting to make them productive. Silvicultural operations, such as improvement cutting and thinning, can be carried out to good advantage over a large part of our forest area. There is much to be done in improving forage resources, developing recreational facilities, and checking erosion. Estimates recently compiled by the United States Forest Service indicate that jobs aggregating more than 1,300,000 man-months could advantageoulsy be undertaken during the current year on the national forests alone, and more than 148,000 man-months on state, county, and municipal forest lands. Probably two or three times as much work could be done on privately owned forests, if ways could be devised for financing it.

Most of these tasks can be undertaken at short notice. They can be done more economically at times when there is little competition for labor by other industries. As emergency work in times of depression, they will help to maintain purchasing power of the workers without at the same time increasing the output of goods for immediate consumption. This will help to maintain consumption and thus to reduce surpluses of consumers' goods.

Regardless of depressions, work of this kind is altogether worth while as a public enterprise. National welfare demands that a major portion of our forest lands be kept productive. Properly planned forest work will generally pay for itself in the long run. But whether it pays a cash return or not, the social benefits from widely dispersed, permanent industries and communities will in themselves justify a large program of public forest development.

Use of Subsidiary Corporations in Segregating Risks

By KENNETH FIELD

EXPERIENCE shows that financial policies are really tested and false theories exploded in periods of general business depression. In such times unsound financial structures crumble and fail to function in the predicted manner. Receiverships turn the spotlight of publicity on manipulations, abuses, and weaknesses in practical operation which might have been effectively concealed had business conditions remained prosperous. The current depression has been especially effective in testing and clarifying financial theories. It has provided an abundance of material for the study of all kinds of policies; but of particular interest here is the great light it has thrown on holding company structure and theory. The collapse of the giant Insull empire and of a large number of smaller structures, the disclosures arising from receiverships, and the evidence which disillusioned security holders have presented during suits—all have provided means for a more dependable statement of holding company financial theory. This state of facts is particularly true with respect to intercorporate risk structures.

By the phrase "intercorporate risk structures" is meant those financial arrangements which have been made by holding company systems for the purpose of separating the credit risks of the different properties which a system controls. The method of setting up these structures has been almost uniform. Financiers have separated credit risks chiefly by placing different properties in the ownership of separate corporations and then causing each corporation to finance its own properties. Thus claims against the assets of one corporation can be prosecuted without regard to claims against the assets of other corporations in the same holding company system. Through this device one corporation is supposedly insulated from the liabilities of all others in the system. Although the method of separating credit risks has been practically uniform, the devices evolved have varied considerably. Both the facts of the individual cases and of the ends sought have caused variations. Because of the multiplicity of factors bearing on particular situations, the subject of risk segregation can best be approached by discussing the several types of risk structures which have been developed. Hence, this article presents the subject under the following headings: (1) insulation of holding companies from liabilities of subsidiaries; (2) insulation of subsidiaries from liabilities of holding companies; (3) policies of insulation; (4) circumstances under which insulation is a dominating factor; (5) threats to solvency; (6) segregation of risks for purposes of new financing; (7) segregation of risks in non-electric railway industries; (8) avoiding restrictions in existing financial structures; (9) practical weaknesses of risk structures; (10) milking devices; (11) manipulations of consolidation processes and investment accounts; and (12) intercompany loans.

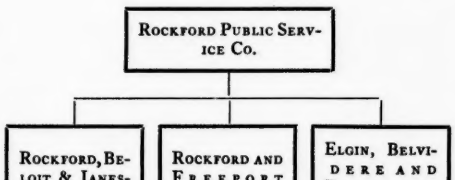
Insulation of Holding Companies from Liabilities of Subsidiaries

Subsidiary corporations are used either to insulate the holding corporation

from the liabilities of the subsidiary or to insulate the subsidiary from the liabilities of the holding corporation. The following excerpt from *Electric Traction*[1] illustrates clearly the theory of insulating holding corporations from the liabilities of their subsidiaries:

"After securing all of the properties under the hammer, the Rockford Public Service Company was organized to take over the lines of the former Rockford City Traction Company and to operate the interurban lines. Rather than have a paying property suffer through the inability of another property to pay, separate companies were organized for each of the roads. The lines are now organized as the Rockford, Beloit and Janesville Railway, the Rockford and Freeport Railway, and the Elgin, Belvidere and Rockford Railway, this last being a consolidation of the old Rockford and Belvidere Railway, owned by Bion J. Arnold. These companies are all operated by the Rockford Public Service Company, but must stand or fall according to their own earning possibilities."

Exhibit I.


Rockford Public Service Co.
Rockford, Beloit & Janesville Railway
Rockford and Freeport Railway
Elgin, Belvidere and Rockford Railway

Here, as shown by Exhibit I, any compartment in the holding company system can fail without dragging down other components.

Because of the drastic decline in their credit, electric railway properties were extensively segregated in this manner during and after the World War. Whereas single corporations had previously owned both electric railway and electric power properties, the properties were now rapidly transferred to the ownership of separate corporations as soon as the electric railways started drifting toward failure.[2] More recently, financiers have segregated natural gas, oil, manufacturing, and mining properties of public utility systems in much the same manner.[3]

A more complicated method of insulating holding companies from the liabilities of their subsidiaries was developed in connection with those California properties which were incorporated before 1929. These structures had their origin in the peculiar provisions of the California corporation laws; and since those provisions have been eliminated, the structures are now of interest only to the extent that they may apply to banking corporations, or other corporations whose stockholders are liable for debts of the corporation to an amount in excess of what they have already paid in. An example drawn from the American Water Works and Electric Company system will illustrate the structure.

In California, prior to August, 1929, each shareholder of a corporation was "personally liable for such proportion of all its debts and liabilities contracted or incurred, during the time he was a stockholder, as the amount of stock or shares owned by him" bore "to the whole of the subscribed capital stock, or shares of the corporation or association."[4] And the same liabilities were imposed on the stockholders of foreign corporations

[1] November, 1927, p. 600.

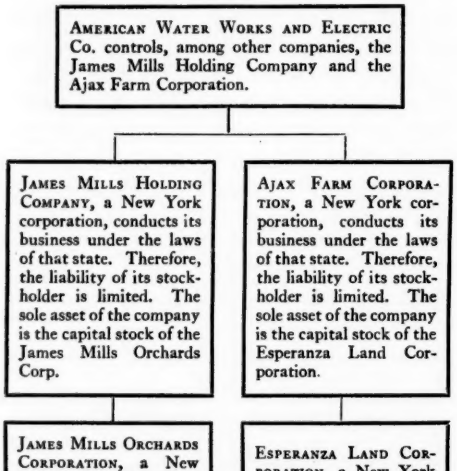
[2] See particularly Federal Trade Commission: *Control of Power Companies* (Washington, 1927), pp. 82–83 (American Gas & Electric Co.) and p. 127 (Lehigh Power Securities Corp.). See also P. U. R. 1924 E (Public Service Corp. of New Jersey).

[3] See Moody's *Public Utilities, 1928*, pp. 1022 and 1051. (Cities Service' segregation of oil and natural gas properties.) These segregations will be discussed more fully subsequently.

[4] Const., art. 12, sec. 3 (1928).

doing business in California.[5] In 1914 the American Water Works and Electric Company was formed from the wreckage of the old American Water Works and Guarantee Company. The latter company had been ruined by expansion into the irrigation business, and among the assets which it turned over to its successor were some land projects in the Sacramento Valley. With the disastrous experience of its predecessor before it, the American Water Works and Electric Company protected itself against further liability to the project by the series of holding company structures shown in Exhibit II.

Exhibit II.


AMERICAN WATER WORKS AND ELECTRIC Co. controls, among other companies, the James Mills Holding Company and the Ajax Farm Corporation.
JAMES MILLS HOLDING COMPANY, a New York corporation, conducts its business under the laws of that state. Therefore, the liability of its stockholder is limited. The sole asset of the company is the capital stock of the James Mills Orchards Corp.
AJAX FARM CORPORATION, a New York corporation, conducts its business under the laws of that state. Therefore, the liability of its stockholder is limited. The sole asset of the company is the capital stock of the Esperanza Land Corporation.
JAMES MILLS ORCHARDS CORPORATION, a New York corporation, conducts its business under the laws of the State of California. Therefore, its stockholder had personal liability under the old law. Its assets consist of land.
ESPERANZA LAND CORPORATION, a New York corporation, conducts its business under the laws of the State of California. Therefore, its stockholder had personal liability under the old law. Its assets consist of land.

Under the intercorporate structure outlined above, the status of liability would have been as follows: In case it had been undertaken to enforce the personal liability of the stockholder of the James Mills Orchards Corporation or of the Esperanza Land Corporation, the only asset to be levied upon would have been the capital stock of the company which had become bankrupt. Since this stock would have become worthless before suit was brought against the stockholder, the interposition of a holding company would have effectively limited the liability of the American Water Works and Electric Company.

Insulation of Subsidiaries from Liabilities of Holding Companies

Subsidiaries formed to evade bond covenants illustrate the practice of insulating subsidiary properties from the liabilities of holding companies. Every student of finance is familiar with the practice of organizing subsidiaries to acquire property when the parent company finds its borrowing power limited because its own properties are encumbered with closed mortgages containing after-acquired property clauses. However, little attention has been paid to the use of subsidiaries for the purpose of avoiding the restrictions of debenture covenants which require debentures to be secured ratably in case the assets of the company are subsequently pledged or mortgaged. This use of the subsidiary is illustrated by the case of Film Production Corporation, a subsidiary of Paramount Publix Corporation. The facts surrounding the formation of this subsidiary were alleged to be as follows:[6]

"To obtain an extension of $10,500,000 unsecured bank loans last March (1932), the company turned over as security to the banks negatives of its current film productions, thereby removing them as assets applicable to the 5½% bonds of the company. This was done through the formation of a new company, the Film Production Corp. and the assignment of the negatives to this company."

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[5] Const., art 12, "Sec. 3. Each stockholder of a corporation, or joint-stock association, shall be individually and personally liable for such proportion of all its debts and liabilities contracted or incurred, during the time he was a stockholder, as the amount of stock or shares owned by him bears to the whole of the subscribed capital stock, or shares of the corporation or association. . . . "

"Sec. 15. No corporation organized outside the limits of this state shall be allowed to transact business within this state on more favorable conditions than are prescribed by law to similar corporations organized under the laws of this state."

[6] 135 *Commercial and Financial Chronicle* 310 (July 9, 1932).

Although it had been assumed[7] that courts would disregard the corporate entity of the subsidiary in cases of this type, the New York Supreme Court upheld this particular transaction in the following language:[8]

"From the facts submitted it does not appear that the covenant in the indenture here involved against creating a mortgage or lien upon assets directly owned by the Paramount Company was breached by the agreement entered into between the Paramount Co., the banks and the Film Production Corp."

In the first skirmish, therefore, the device has been upheld.[9]

Policies of Insulation

Examination of holding company risk structures discloses that many subsidiaries are far better insulated against the liabilities of their control companies than are the control companies against the liabilities of their subsidiaries. Not infrequently the parent corporation will advance all funds required by the subsidiary, guarantee its bonds, or purchase them itself—policies which are, from every angle, repugnant to limited liability. These policies are especially prevalent among industrial concerns.

Direct guarantees of subsidiary company bonds are very common. Thus the United States Steel Corporation guaranteed the principal and interest of the Indiana Steel Company Gold 5s when it organized that company to build the Gary plant.[10] Besides direct guarantees, there are several types of indirect guarantees. Goodyear Tire & Rubber Company leases the properties of the Goodyear Fabric Corporation at a rental sufficient to meet interest and sinking fund payments on the Fabric Company's bonds, and this lease is pledged with the trustee of the bond issue.[11] The (Chicago) Tribune Company agreed "to purchase, or cause to be purchased, the entire output of "Tonawanda Paper Company, Inc." at such prices as will assure Company of profits adequate to meet interest charges, taxes, etc., and in addition agrees to advance to Company any amounts by which profits of Company shall be insufficient to meet all interest charges, taxes, and the serial maturities" of its bonds.[12] Arcadia Mills and Mills Mill entered into contracts

[7] Cf. Berle, A. A., *Studies in the Law of Corporation Finance* (Chicago: Callaghan & Company, 1928), pp. 166 ff.

[8] 135 *Commercial and Financial Chronicle* 4228 (December 17, 1932).

[9] The legal status of many types of holding company structure is still unsettled. However, F. J. Powell has recently presented an able summary of the available cases on disregard of the corporate entity in the following language:

"Except in cases of express agency of the subsidiary, or the actual commission of a tort by the parent corporation, either alone or jointly with the subsidiary, there are three essential elements in the complainant's cause of action against the parent corporation. He must prove *first*, that the parent corporation has exercised its control over the subsidiary, not in the manner normal and usual with stockholders, but to such a degree that it has reduced the subsidiary to a mere instrumentality; *second*, that this control has been exercised in such a way as to constitute fraud, wrong or injustice with respect to the complainant; and *third*, that (except in certain cases of so-called estoppel) a refusal to disregard the separate corporate entity of the subsidiary would result in unjust loss or injury to the complainant." (*Parent and Subsidiary Corporations* (Chicago: Callaghan & Co., 1929), p. 103).

W. O. Douglas and C. M. Shanks have taken the position that the following requirements must be met if the holding company is to be safe from the liabilities of its subsidiaries: (1) maintenance of the financial structure of the subsidiary at sufficient strength to meet the normal strains of the subsidiary's business, (2) complete separation of business and accounting records of the subsidiary from those of the parent, (3) observance of the ritual of separate directors' meetings and official acts, and (4) avoidance of public representations to the effect that the subsidiary is a part of the parent enterprise. ("Insulation from Liability Through Subsidiary Corporations," 39 *Yale Law Journal* 196–197, 218 (December, 1929).)

[10] Poor's *Industrials, 1926*, p. 2588. (New York: Poor's Publishing Co.)

[11] *Ibid.*, p. 1910.

[12] *Ibid.*, p. 776.

with Fairforest Finishing Company, "guaranteeing to supply cloth equal to at least 85% of their production, so long as notes are outstanding, at a commission" to the finishing plant, "which it is estimated will give ample net profits to pay principal and interest of" its gold notes.[13] Guarantees of indebtedness are, of course, directly in conflict with attempts to limit liability. But, in passing, it may be noted that these conflicting guarantees are necessary if the securities of many subsidiaries are to be sold economically.

The financial structure and internal policies of the holding corporation are frequently quite as much in conflict with the principle of insulating it from the liabilities of its subsidiaries as are its outward guarantees. For example, International Agricultural Corporation covenants in its own bond indenture that "none of the subsidiary companies can create any bonded indebtedness, except for pledge under this mortgage, and they can create no floating indebtedness except such as is incidental to ordinary course of business."[14] This common type of provision forces the holding company to carry practically the entire risks of the subsidiary's business. The policy of holding all bonds of the subsidiary, though not so binding as the indenture requirement mentioned above, tends to have the same effect in case of financial disaster to the subsidiary. This policy is illustrated by the now insolvent People's Light and Power Corporation, which in 1927 held all stocks and bonds of 14 subsidiary corporations,[15] and by that of the late Republic Railway and Light Company whose system, in 1926, held the entire securities of all except nine of its 64 companies.[16] Obviously, insulation from liabilities has been a secondary consideration in the formation of these subsidiaries.

Circumstances under Which Insulation Is a Dominating Factor

Since it is clear that insulation from liability has not been an important factor in causing the organization of large numbers of subsidiaries, the question naturally arises: Under what circumstances does insulation from liability become a dominating factor in the arrangement of holding company financial structures?

In a certain sense holding company structures erected for a variety of purposes may be said to be based on the proposition of insulating individual companies from liabilities. Elsewhere the author has considered and discussed a large number of the uses of the holding company,[17] but the present paper is not concerned with such matters as the manipulation of tax returns, etc. The liabilities here envisaged are the debts which arise in the course of financing or conducting business operations. Here the risks to be guarded against are those inherent in the financial structure of the companies or in the nature of the business operations. For that reason, these other important, but nevertheless ex-

[13] Moody's *Industrial Supplement*, May, 1929, p. 357).

[14] Poor's *Industrials*, *1926*, p. 670.

[15] Poor's *Public Utilities*, *1927*, p. 2358.

[16] 88 *Electrical World* 1039–1040 (July 10, 1926).

[17] These uses include the segregation of regulated from non-regulated businesses, segregation of businesses conducted under different regulatory jurisdictions, liberalization of capital liabilities structures of quasi-public corporations, evasion of discriminatory foreign corporation laws, evasion of taxes, evasion of franchise obstacles, betterment of access to foreign money markets, betterment of public relations through local representation on directorates, exaction of profitable service fees from regulated companies, and a variety of others. Field, K., "Some Uses of Holding Corporations," 8 *Journal of Land & Public Utility Economics* 175–190 (May, 1932); and Field, K., "Public Utility Holding Corporations," 19 *University of Colorado Studies* 227–301 (June, 1932).

traneous, uses of holding company structures are excluded from the present discussion.

Without intending to be completely exclusive, one may say that insulation from liability is the dominating financial factor in three classes of cases: (1) where one of two or more enterprises owned by a single corporation is becoming, or has become, unprofitable, thereby endangering the solvency or success of the other enterprise or enterprises; (2) where one of two or more enterprises owned by a single corporation is more profitable than the others and where new financing is undertaken principally to finance this more profitable enterprise; and (3) where the financial structure of an existing corporation directly restricts additional financing. These classes of cases will be discussed in turn.

Class I: Threats to Solvency

The process of insulating from liability in those cases in which one branch of a corporation's business threatens the solvency of the whole can be best illustrated by examples drawn from the electric railway and electric power industries. The early history of these industries shows that, in order to secure the economies resulting from common generating stations, electric railway properties were combined with power and light properties. At that time the electric railways had excellent credit—the best of the local public utilities; but after the depression of 1907–1909 the credit of electric railway properties declined rapidly. Following the outbreak of the World War increased operating costs and the competition of other forms of transportation cut into the earnings of such roads. The effects of these and other forces on the solvency of the roads is shown clearly by the accompanying tables of receiverships and foreclosures between 1909 and 1931. (Tables I and II).

TABLE I. ELECTRIC RAILWAY RECEIVERSHIPS, 1909–1931.*

Year	Number of Companies	Miles of Single Track Involved	Outstanding Securities (000 Omitted)	
			Stocks	Bonds
1909.....	22	558.00	$29,962	$22,325
1910.....	11	696.61	12,629	75,491
1911.....	19	518.90	29,533	38,973
1912.....	26	373.58	20,211	11,134
1913.....	18	342.84	31,007	47,272
1914.....	10	362.39	35,563	19,050
1915.....	27	1,152.10	40,298	39,372
1916.....	15	359.26	14,477	10,849
1917.....	21	1,177.32	33,919	33,778
1918.....	29	2,017.61	92,130	163,257
1919.....	48	3,781.12	221,259	312,915
1920.....	19	1,065.31	28,758	72,284
1921.....	19	986.42	32,910	36,178
1922.....	14	695.43	18,140	20,304
1923.....	12	333.63	8,332	14,707
1924.....	12	1,021.88	28,490	35,716
1925.....	14	1,260.07	51,383	54,697
1926.....	16	1,228.28	17,769	117,560
1927.....	13	624.32	17,615	20,875
1928.....	8	261.95	9,217	14,791
1929.....	5	425.50	39,035	35,138
1930.....	12	1,431.34	85,359	108,372
1931.....	17	1,308.10	38,262	43,026

*Moody's *Public Utilities, 1932*, p. xli.

Financiers met this threat to the solvency of combined properties by a thorough-going policy of segregating power and light from railway properties, through the formation of new corporations and transfer of the power properties to them. In taking over these properties, the new corporations assumed the debts encumbering the properties and paid for the net equities by turning over their own securities, usually stocks, to the selling companies. This process divorced liabilities but left an identity of ownership interest. However, in a large number of cases, operating properties were consolidated at the time of segregation. In these cases power properties were traded for electric railway properties and vice versa so that, ultimately, the two types of operating com-

panies became financially almost entirely divorced and the controlling equities of both types of companies became lodged in the portfolios of the holding companies.

TABLE II. ELECTRIC RAILWAY FORECLOSURE SALES, 1909 TO 1931.*

Year	Number of Companies	Miles of Single Track Involved	Outstanding Securities (000 Omitted)	
			Stocks	Bonds
1909.....	21	488.00	$22,266	$21,174
1910.....	22	724.36	19,107	26,374
1911.....	25	660.72	91,355	115,093
1912.....	18	267.18	14,197	10,685
1913.....	17	302.28	15,244	19,095
1914.....	11	181.26	26,240	44,094
1915.....	19	308.31	30,509	16,760
1916.....	19	430.14	13,895	22,702
1917.....	26	745.19	27,282	27,313
1918.....	23	524.22	37,740	20,149
1919.....	29	2,675.48	89,893	79,837
1920.....	13	259.90	7,782	11,227
1921.....	13	777.97	33,642	30,864
1922.....	13	322.88	7,492	12,641
1923.....	15	927.45	118,078	110,638
1924.....	14	869.25	21,023	34,846
1925.....	13	569.39	18,074	18,330
1926.....	28	1,291.17	20,055	57,340
1927.....	16	940.68	53,345	78,445
1928.....	8	1,003.73	26,084	40,683
1929.....	10	510.38	18,473	21,174
1930.....	8	1,054.88	36,255	44,564
1931.....	12	844.78	38,207	19,770

*Moody's *Public Utilities, 1932*, p. xli.

Many notable examples of this type of reorganization could be cited. In 1920 Republic Railway and Light Company and Lehigh Power Securities Corporation caused large-scale segregations of the electric railway properties in their systems;[18] Commonwealth Power, Railway and Light Company followed in 1922;[19] and Public Service Corporation of New Jersey in 1924.[20] The segregation achieved by Commonwealth Power, Railway and Light Company was most drastic, and hence illustrates the procedure most clearly. In 1922 this Company decided to separate its electric power from its traction properties. As a first step it vested ownership of the two types of property in different local companies. It then organized the Commonwealth Power Corporation and conveyed the controlling stocks of the power companies to the new Corporation. Later, in 1924, it organized the Electric Railway Securities Corporation and conveyed the controlling stocks of the traction companies to the latter. As a final step, the preferred stock of Commonwealth Power, Railway and Light Company was exchanged for preferred stock of Commonwealth Power Corporation, and the common stocks of the Commonwealth Power Corporation and Electric Railway Securities Corporation were distributed to the common stockholders of Commonwealth Power, Railway and Light Company. The latter company was then dissolved.[21] In this case the properties were completely separated without dealing with outside parties.

Separation can likewise be obtained by disposing of individual traction properties to other public utility interests from time to time. American Gas and Electric Company followed this piecemeal practice in ridding itself of traction, bus, and gas properties. Thus in 1925 it disposed of several traction and gas properties to Middle West Utilities Company and several traction and bus properties to National Public Service Corporation.[22] It also disposed of other properties from time to time until December 31, 1927, when it sold practically all remaining bus and traction properties to Central Public Service Corporation.[23]

[18] Federal Trade Commission: *Control of Power Companies* (1927), pp. 127 and 264.

[19] See note 21, below.

[20] *Re Public Service Electric Co.*, P. U. R. 1924 E.

[21] For the details of this case see: Poor's *Public Utilities, 1926*, p. 2096; Federal Trade Commission: *Control of Power Companies* (1927), p. 198; and 13 *N. E. L. A. Bulletin* 620 (October, 1926).

[22] Federal Trade Commission: *Control of Power Companies* (1927), p. 91.

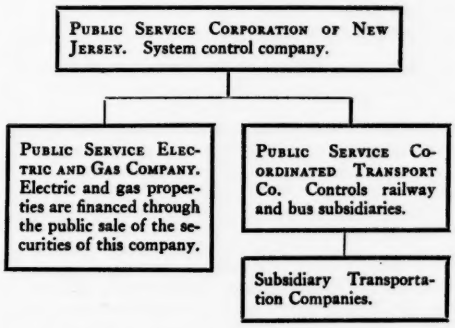
[23] *New York Times*, December 31, 1927, p. 26.

Class II: Segregation of Risks for Purposes of New Financing

Problems raised by the combining of electric railway and electric power properties can also be used as a point of departure in studying the insulation of properties for purposes of new financing. This use of holding-company-subsidiary-company relationships involves several elements: (1) the fact that the securities of a corporation having interests in several types of businesses necessarily represent a variety of risk factors; (2) the fact that the presence of a variety of risk factors may make it difficult to sell those securities because of the uncertainties thereby created; and (3) the fact that new securities may be sold primarily to secure funds for only one of the businesses involved.

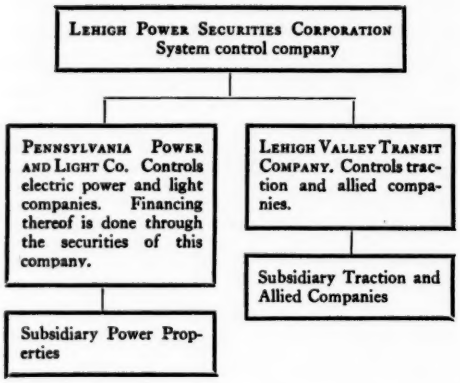
The preceding section points out that in recent years the credit of the electric railway industry has gone steadily downhill, whereas that of the electric power and light industry has improved. That section also points out that the railway properties were placed in the ownership of separate corporations when it was desired to shut them off from the rest of a holding company system or to eliminate them entirely. In this section will be treated those cases where the electric railway properties are retained in the system, but are segregated in such a way that their presence shall not impair the credit of the power properties. This segregation policy, like the policy of elimination, requires that the electric railway properties be placed in the ownership of corporations which are separate from the corporations owning the power properties. That is, it is necessary that the operating company not own electric railway properties if its securities are to be free from electric railway business risks. If financing is to be done by holding companies, this policy also requires that the holding companies not own equities in electric railway properties. Hence, if the electric railway properties are retained in the holding company system, it is necessary that sub-holding companies be created to own segregated sub-systems of power properties. When this is done, the sub-holding company can issue its securities to finance the underlying properties, thereby offering to the public securities which are theoretically free from electric railway risks. The top holding company then remains chiefly a device for binding the two sets of properties together, financing being done through the sub-holding companies. The accompanying diagrams (Exhibits III and IV) show financial structures designed to permit separate financing of different types of business risks.

Exhibit III.


Public Service Corporation of New Jersey. System control company.
Public Service Electric and Gas Company. Electric and gas properties are financed through the public sale of the securities of this company.
Public Service Coordinated Transport Co. Controls railway and bus subsidiaries.
Subsidiary Transportation Companies.

It is to be noted that this method of financing has merit chiefly when the growth factors of the different types of properties are such that the new financing is undertaken primarily for the benefit of the more prosperous properties. If both types of properties required equal amounts of new capital, it is doubtful if segregation would reduce the average cost of new money. If financing were undertaken chiefly for the business with the poorer credit, the

Exhibit IV.


LEHIGH POWER SECURITIES CORPORATION
System control company
PENNSYLVANIA POWER AND LIGHT CO. Controls electric power and light companies. Financing thereof is done through the securities of this company.
LEHIGH VALLEY TRANSIT COMPANY. Controls traction and allied companies.
Subsidiary Traction and Allied Companies
Subsidiary Power Properties

average cost of new capital would be increased because the bulk of the securities would not have the backing of properties with the stronger credit. The electric power and electric railway industries which have been used for illustration clearly support this theory. Table III shows clearly that nearly all new financing of electric industries during the past decade has been for the benefit of power rather than railway properties.

TABLE III. COMPARISON OF ELECTRIC RAILWAY TRACK EXTENSIONS WITH EXPENDITURES FOR ADDITIONS AND EXTENSIONS TO ELECTRIC POWER PROPERTIES.*

Year	Miles of Urban and Interurban Track	Power Company Expenditures (000 Omitted)
1921	147.1	$222,408
1922	211.4	324,016
1923	233.2	602,143
1924	312.1	692,440
1925	339.8	721,300
1926	317.9	841,344
1927	192.4	760,353
1928	239.0	786,977
1929	167.7	866,344
1930	153.0	960,190
1931	119.1	633,415

*Moody's *Public Utilities, 1932*, p. xxxvii and *Electrical World*, Vol. 91, p. 32 and Vol. 99, p. 30.

Faced with this fact, financiers have segregated power properties and financed them on their own merits. Table IV shows how the Lehigh Power Securities Corporation system (now a part of the National Power and Light Company system) financed new capital requirements through the Pennsylvania Power and Light Company, a sub-holding and operating company.

TABLE IV. FINANCING BY LEHIGH POWER SECURITIES CORPORATION SYSTEM.*

Year	Total Bonded Debt (000 Omitted)		
	Lehigh Power Securities Corporation	Pennsylvania Power & Light Co.	Lehigh Valley Transit Co.
1922	$16,155	$28,280	$13,550
1923	13,881	38,068	12,539
1924	11,254	37,905	12,503
1925	7,567	43,738	12,497
1926	25,000†	55,636	11,866
1927	25,000†	55,497	11,601
1928	25,000†	71,169	11,550
1929	25,000†	70,763	11,433
1930	25,000†	90,856	11,276
1931	25,000†	131,211	11,155

*Compiled from Moody's *Public Utilities*, Poor's *Public Utilities*, and *Commercial and Financial Chronicle*.

†Lehigh Power Securities Corporation was consolidated with United Securities Company in January, 1926. The change in amount of bonded debt was an incident to recapitalization of the Company at that time. These figures exclude assumed bonds of Lancaster County Railway and Light Company of which $746,500 were outstanding in 1931.

Subsidiary properties of Public Service Corporation of New Jersey,[24] Commonwealth and Southern Corporation,[25] and a number of other large systems tell the same story of segregated financing.

The changes in securities outstanding for different companies in the Public Service Corporation of New Jersey system show not only segregated financing of the high credit properties but composite financing of the poor credit properties. That is, electric light and power properties are financed directly through

[24] See Table V below.

[25] See the comparative balance sheets of Pennsylvania-Ohio Power and Light Company in Poor's *Public Utilities, 1926*, p. 1851; and Moody's *Public Utilities, 1928*, p. 1900. This company, now dissolved, was formed to take over the power companies in the old Republic Railway and Light Company system.

TABLE V. FINANCING BY THE PUBLIC SERVICE CORPORATION OF NEW JERSEY SYSTEM*

Year	Public Service Corporation of New Jersey	Public Service Electric and Gas Company		Public Service Coordinated Transport Company†		
	(000 Omitted)					
	Bonds and Stock Outstanding	Bonds and Preferred Stock Outstanding‡	Public Service Corporation and Affiliated Company Securities Held by Public Service Gas & Electric	Mortgage Bonds Outstanding§	Advances from Public Service Corporation	Company's Stock Held by Public Service Corporation
1924.....	$149,628	$61,586	$31,497	$41,753	$2,950	$41,998
1925.....	173,164	79,086	32,253	41,753	3,580	46,848
1926.....	207,325	94,086	31,797	41,750	10,325	46,848
1927.....	261,367	139,024¶	53,006	41,575	15,925	46,848
1928.....	279,918	139,039	52,721	41,568	12,375	46,608
1929.....	301,529	159,039	50,894	41,563	694	47,858
1930.....	323,431	159,150	30,564	27,184	375	79,223
1931.....	331,015	141,150	30,564	26,819	375	79,223

*Compiled from Moody's *Public Utilities*, Poor's *Public Utilities* and the *Commercial and Financial Chronicle*.
†Predecessor companies prior to 1928.
‡Includes only securities issued by Public Service Electric and Gas Co. after its formation.
§All stock is owned by Public Service Corp. of New Jersey. Equipment obligations and real estate mortgages have been excluded.
¶Published figures of $180,610,300 have been reduced by the amount of issues called in refunding operations.

Public Service Gas and Electric Corporation because the average cost of electric power capital is reduced by direct financing, whereas electric railway and bus properties are financed indirectly through Public Service Corporation because—since the parent company's securities represent a composite risk in the electric power, gas, and transportation industries—its securities can be sold on a lower yield basis than can a direct transportation security. Table V shows the direct financing of power properties and the indirect financing of transportation properties.

It is especially noteworthy that the credit of Public Service Electric and Gas Company has been used to bolster up other parts of the Public Service Corporation system, as is shown clearly by its large holdings of securities of Public Service Corporation and affiliated companies.

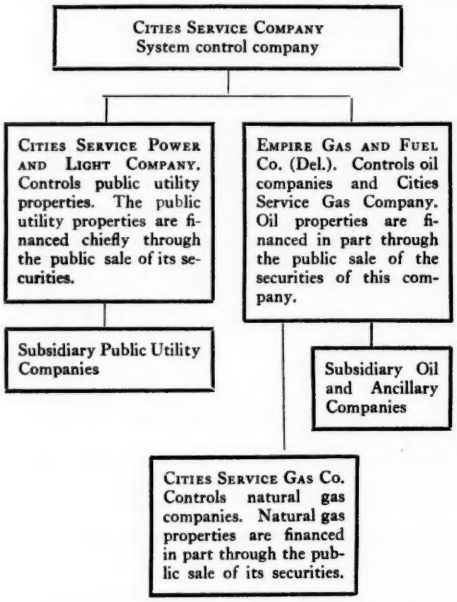
[26] 130 *Commercial and Financial Chronicle* 2577 (April 12, 1930); and 3884 (May 31, 1930).
[27] 132 *Ibid.* 144 (January 3, 1931).
[28] 130 *Ibid.* 478 (January 18, 1930); *New York Journal of Commerce*, January 17, 1930, pp. 1 and 2.

Segregation of Risks in Non-electric Railway Industries

Although the electric power and electric railway industries have been used to illustrate the theory of financing segregated risks, this practice is not confined to these industries. Thus Columbia Gas and Electric Corporation segregated its oil from its public utility business;[26] Standard Oil Company of California, its filling station business from its other business;[27] Erie Railroad, its coal properties;[28] Delaware and Hudson Company, its coal properties;[29] New England Public Service Company, its manufacturing properties;[30] Electric Power and Light Corporation, its natural gas;[31] and Cities Service Company, its natural gas and oil properties.[32] The main outlines of the Cities Service system structure are given in Exhibit V.

[29] *New York Times*, January 21, 1930, p. 51.
[30] 130 *Commercial and Financial Chronicle* 3738 (May 24, 1930).
[31] 130 *Ibid.* 2024 (March 22, 1930).
[32] 29 *Annalist* 722; Cities Service Company, *Annual Report*, 1924. See also Exhibit V.

Exhibit V.


Cities Service Company
System control company
Cities Service Power and Light Company. Controls public utility properties. The public utility properties are financed chiefly through the public sale of its securities.
Empire Gas and Fuel Co. (Del.). Controls oil companies and Cities Service Gas Company. Oil properties are financed in part through the public sale of the securities of this company.
Subsidiary Public Utility Companies
Subsidiary Oil and Ancillary Companies
Cities Service Gas Co. Controls natural gas companies. Natural gas properties are financed in part through the public sale of its securities.

Class III: Avoiding Restrictions in Existing Financial Structures

Those restrictions in existing financial structures which hamper additional financing are found principally in debenture and mortgage covenants. The typical debenture covenant which restricts financing may be illustrated by the following summary:[33]

"The bonds are issued under an indenture in which the Corporation covenants that except in case of purchase money mortgages, and except in case of pledges in the usual course of business for terms not exceeding one year, it will not at any time mortgage or pledge any of its property without thereby expressly securing the principal and interest of the outstanding bonds of this issue equally and ratably with any and all other obligations or indebtedness secured by such mortgage or pledge."

The typical mortgage covenant which restricts future financing is the after-acquired property clause in the closed mortgage. This clause, repeated in the description of each parcel of property mortgaged, ordinarily reads somewhat as follows: "of whatsoever nature, whether now owned or which may hereafter be acquired,"[34] or "which the..... Company now owns or in which it has any interest, or which it may hereafter acquire."[35]

The provisions requiring that debentures be secured equally and ratably become important when the debts of a corporation have become excessive in comparison with the security underlying them. Under such circumstances the ratable securing of new debts will not be satisfactory to potential creditors because the security for the new debts will be inadequate. Yet, additional funds for continuing operations or an extension of existing short-term loans may be necessary to stave off receivership of the corporation. Faced with these alternatives, corporations have frequently transferred some of their assets to a subsidiary corporation and have mortgaged or pledged them in the subsidiary's name. This method of evading debenture covenants has already been illustrated in the section on insulation of subsidiaries from liabilities of holding companies; so it need not be further discussed at this point.

After-acquired property clauses interfere with additional financing, chiefly in two classes of cases: (1) when the clause is contained in a closed mortgage so that no more bonds secured by that lien can be issued to finance new pur-

[33] Summary of the security for International Telephone & Telegraph Corporation Twenty-Year 5½% Convertible Gold Debentures (Poor's *Public Utilities, 1926*, p. 1490.)

[34] Mortgage and Deed of Trust dated March 1, 1929, The Daniels and Fisher Realty Company to The Colorado National Bank of Denver, Trustee, p. 7.

[35] Form of corporate mortgage, Page, R. G. and Gates, P. G., *The Work of Corporate Trust Departments* (New York: Prentice-Hall, Inc., 1927), p. 338.

chases; and (2) when the clause is contained in an open-end mortgage, but when the security protecting the existing issue of bonds is so inadequate that new series of bonds secured by the same mortgage are not attractive to purchasers. In the first class of cases a junior lien is not attractive because of the size of the senior lien debt; in the latter class of cases an equal lien is likewise unattractive because of the excessive size of the entire issue of bonds. Under these circumstances it is either very costly[36] or impossible for the company to finance additions directly.

However, since the company can mortgage no greater equity than it has, there are several ways to evade the after-acquired property clause. The company may evade it through the lease of property or through the purchase of property under conditional sale agreements—methods now generally used in connection with railroad equipment and formerly used in securing generating equipment for electric power companies; it may acquire property subject to purchase money mortgages; it may pledge old assets which have been released under poorly drawn mortgage clauses providing for the withdrawal of old property when new is substituted under the mortgage—a method available only in most exceptional cases; the company may also consolidate with another company, thereby terminating, in the absence of statutory provisions to the contrary, the operation of the after-acquired property clauses; and finally, it may acquire properties in the name of a subsidiary corporation. Each of these methods has special advantages in some types of transactions. However, the subsidiary corporation method alone is pertinent to the present inquiry.

Assuming that dissolution of the corporation by consolidating it with another is not desirable, one finds that the purchase of property through subsidiary corporations offers distinct advantages. Stated negatively, these advantages arise when the new property is not adapted to acquisition under the conditional sale, lease, or purchase money mortgage methods; or stated positively, they arise when the property must be built by a corporation specially organized to build it if it is not built by the parent corporation itself. Thus ordinarily a subsidiary corporation must be used to build a large plant, because otherwise constructors will not be able to raise the capital and take the risks of the new undertaking. Likewise, the subsidiary method becomes necessary when investors require that property be owned separately so that the identity of the property will be preserved and so that the property will not be mingled with other properties of the combined enterprise.

In connection with the last point, it may be noted that if the investor's protection requires that a separate corporation own the property, he should see that the company's mortgage prohibits consolidation or merger until the bonds are retired.[37] Otherwise the parent company can merge its subsidiary after the transactions have been financed. Since it eliminates an unnecessary corporate entity, merging is common. In case of merger, however, if the identity of properties is lost and if the debt of the combined properties is excessive, the bondholders of the subsidiary may suffer.

[36] The extra cost is the difference between the yield of second lien, or weak bonds of the parent company, and of bonds having a direct first lien on the property acquired.

[37] This protection against dilution of security is sometimes found in the mortgages of large operating companies. Thus Pennsylvania Edison Company had such mortgage provisions in 1926. (See 88 *Electrical World* 1191 (December 4, 1926).)

The case of Public Service Electric Power Company is an excellent illustration of the creation and elimination of a subsidiary formed to acquire property free from the restrictions of the parent company's financial structure. This corporation was first organized because the closed mortgage of Public Service Corporation of New Jersey made separate financing of generating facilities necessary. Later, the difficulties of financing new distributing facilities led to the refinancing of Public Service Corporation of New Jersey. In the course of refinancing, all gas and electric operating companies owned by Public Service Corporation were amalgamated into the Public Service Electric and Gas Company. Shortly thereafter, Public Service Electric and Gas Company acquired the assets of Public Service Electric Power Company, thereby recombining in a single ownership unit the properties that had been separately incorporated and financed.[38]

Practical Weaknesses of Risk Structures

So far this article has dealt almost exclusively with the nature and theory of these intercorporate structures. It is now pertinent to examine how the structures have worked out in practice. From this standpoint, the structures designed to insulate against insolvent units have fulfilled the intended purpose. However, managements have occasionally sent good money after bad for a considerable period before letting an insolvent subsidiary go. But, by and large, the structures have stood. Not so with structures designed to evade debenture covenants or to segregate business risks! In fact, the latter types of structures can be largely defeated by milking devices, manipulations of consolidation processes and investment accounts, and inter-company lending operations.

Milking Devices

Business parlance defines "milking devices" as arrangements whereby the resources of a company are drained away. One can group the more prominent of these practices (so far as of interest here) under the headings: excessive dividend declarations, excessive management fees, unfair inter-company contracts, and incomplete development of corporate units.

Excessive dividend payments are especially dangerous to the interests of security holders in two ways: (1) they drain away cash at a time when cash can ill be spared; and (2) they tend to cause undermaintenance of properties so that permanent efficiency of operations is impaired. Both of these dangers are matters of public concern. Hence, during the year 1932, payments of excessive dividends by public utility companies caused definite governmental action. For example, in certain cases, the public service commissions of Alabama[39] and Wisconsin[40] went so far as to prohibit dividends. In issuing one of its orders, the Wisconsin Commission stated that the company appeared "to be postponing expenditures needed to keep service unimpaired and turning over its cash resources to a holding company seemingly for the sole or primary benefit of still another holding company which is in the hands of receivers."[41]

Table VI shows the abrupt changes in the dividend policies which the Insull management put into force for various subsidiaries in the Middle West Utilities Company system when, in 1931, the

[38] See *Re Public Service Electric Co.*, P. U. R. 1924 E 241 ff.

[39] *United States Daily*, July 16, 1932, p. 5.

[40] *Ibid.*, July 18, 1932, p. 3.

[41] *Ibid.*, October 26, 1932, p. 7.

Middle West Utilities Company was plunging into bankruptcy. It is easy to see, in this case, that the welfare of the operating companies was subordinated to that of the holding companies controlling them. That the financial markets recognized this fact can be inferred from the fact that the bonds of several of the subsidiaries rallied when the holding company was placed in receivership.

TABLE VI. DIVIDEND PAYMENTS OF SUBSIDIARIES IN MIDDLE WEST UTILITIES SYSTEM.*

Name of Company	Dividend Payments	
	1931	1930
Public Service Co. of Okla.†	$1,405,152	$820,152
Southwestern Gas & Elec. Co.†	1,344,950	363,500
Michigan Public Service Co.	136,000	110,625
Missouri Public Service Co.†	65,967	24,985
Mississippi Valley Utilities Investment Co.	1,956,823	1,008,539
Jersey Central Power & L. Co.†	1,999,671	1,147,953
York Railways Co.†	1,100,000	600,000
Eastern Shore Pub. Serv. Co.†	255,150	120,400
Florida Power Corp.†	275,500	175,000
Central Maine Power Co.†	500,000	300,000

* Compiled from Moody's *Public Utilities, 1932.*
†Consolidated statement.

Although the Insull case is in many ways extreme, the policy of dividend bleeding is fairly general among the holding company systems for which information is available. Recent statements of other holding company systems, as contained in the manuals, fail to disclose the amount of dividends paid by 100% controlled subsidiaries. Thus statements of subsidiaries of American Power and Light Company fail to indicate common dividend payments.[42] What the reasons are for not making this information available must be left to conjecture; but it is submitted that, for his own protection, every security holder, from the bondholders down, should insist that the common dividend payments should be made public.

Excessive management fees, the second type of milking device, are paid out of the resources of a business as an operating expense. Hence, such fees may not only drain away cash and cause undermaintenance of properties, but they also constitute a charge ahead of interest on debt and dividends on preferred stock. This last fact is of primary significance to preferred stockholders because a holding company management could scarcely be expected to default on bond interest in order to maintain a fee system. The mere default of interest on bonds would throw the subsidiary into receivership and cut off the fees. In the case of preferred stock, however, the dividend is contingent on the action of the directors; hence, receivership does not result from non-payment of dividends and the corporation is not afforded relief through the receivership channel. To illustrate, the General Gas and Electric Company, the system control company of the former Barstow group, never paid dividends on its common stock and participating preferred stock from the time of its organization in 1912 to its reorganization in 1925; and from 1917 to 1925 it paid no dividends on its cumulative preferred stock. Yet W. S. Barstow & Company, Incorporated, which controlled the General Gas & Electric Company, received an income from the system. This income was received in the form of fees for management and construction services which were rendered by the W. S. Barstow Management Association, Incorporated.[43]

The following quotation indicates clearly to what extremes some managements have carried this method of profiting from their operating companies:[44]

[42] See Moody's *Public Utilities.*

[43] Federal Trade Commission: *Electric-Power Industry*, vol. 2 (1928), p. 214.

[44] *United States Daily*, April 24, 1930, p. 13. The de-

(*Footnote 44 continued on page 164*)

"Mr. Bickley presented two computations of the profits on the services to supervised companies for 1927. In one computation he placed the profit for all services at 106 per cent of cost, while in the second he calculated that, excluding services performed under contracts calling for payment only of costs by the supervised companies, the profit on the remaining three services, described as general supervision, construction supervision, and commissions on sales of securities, was at least 241 per cent, and might be shown to have been more if the company's books were opened to inspection by the Commission.

"The contracts under which the services are performed, Mr. Bickley testified, are terminable on 60 days' notice by either party, but because of direct control of the supervised companies by Bond & Share they practically are terminable only with the agreement of Bond & Share."

Unfair intercompany contracts, the third type of milking device, take a variety of forms in addition to the fee arrangements just discussed. Usually, one company is bled for the benefit of another through a purchase contract; e. g., an electric railway company buys electricity for less than an economic price or an electric generating company pays an excessive price for coal. However, other types of contracts, such as guarantees of indebtedness, are common. The following quotation indicates the general nature of such transactions:[45]

"Insull could not have been unaware of the fact that in 1930 the Peabody Coal Company charged the Commonwealth Edison Company $1 to $1.50 more per ton for coal than the market price for the grade which the Edison Company requires for its purposes. The annual report of the company, on file with the Illinois Commerce Commission, shows that the coal used that year was of all grades, but as the Edison plants crush their coal into powdered form, it was unnecessary to buy the more select grades, and the fact that they did so was for the convenience of the coal company only—so that the latter might underbid other coal companies on contracts to supply state institutions and thus dominate the coal market."

Abuse of control which limits the development or business of subsidiaries, the fourth device, is especially destructive to the interests of holders of subsidiary company securities. In the case of industrial companies such abuse frequently takes the method of throwing business from one subsidiary to another. This method is especially prevalent where the subsidiaries are of varying efficiencies; for with equal ownership interests, the holding company has most to gain by shifting business to the most economical producer. By so doing, the holding company is able to reap the economies of the lower costs; but the less efficient subsidiary is left without an income for its security holders. Far less defensible is the practice of preventing a marketing company from acquiring producing facilities or a producing company from acquiring marketing facilities. Such an arrangement always makes it possible for the more strategically situated company in the organization to drive a hard bargain. The inherent dangers of the situation are well stated in the following excerpts from a letter by Duncan McKeller to minority stockholders of the Venezuelan Oil Concessions, Ltd.:[46]

"Your company is now the largest individual producer of oil in the world. Its present production approximates 50,000,000 barrels per annum, all of which is sold to companies under Shell control . . . .

"In our view the policy of the Shell group is leading to the inevitable result that in 1936, when the existing contracts terminate, your company will be left with an immense

(*Footnote 44 continued from page 163*)
tailed testimony concerning the practices of this and many other companies is available in *Senate Document 92*, 70th Congress, 1st Session.

[45] 72 *New Republic* 201 (October 5, 1932).

[46] *New York Journal of Commerce*, April 10, 1929, p. 6.

production, but all the facilities for its disposal will be in the hands of the Shell—a most unenviable position for your company.

"The whole history of the oil industry shows that it ought long before the present stage of its development to have owned its own transport and refineries. In our opinion it rests with the Shell group to show why your company was prevented from pursuing this policy."

The grave results that sometimes follow such arrangements are indicated by the fact that the Electric Bond and Share Company refused to renew a power contract as one step in negotiating the purchase of the Utah Light & Railways Company.[47] More recently the Federal Power Commission refused to recognize a foreclosure sale of properties of the Clarion River Power Company as a forced sale and commented as follows:[48]

"In its action in the matter of the Clarion River Power Company's license, the Federal Power Commission has established an important precedent. It announces that where a holding company, by foreclosure sale against the property of an operating utility licensed by the Commission, procures a transfer of such property through another company likewise under the holding company's control, the Federal Power Commission will refuse to recognize the transfer as an involuntary sale.

"This ruling, while of general effect on regulation in the interest of the consuming public, incidentally should be of far-reaching importance to investors in the junior securities of operating companies who will find in it a protection to whatever values they may own which might otherwise be impaired or destroyed by transfers of the property. In the present instance, there is involved an issue of $4,453,000 of preferred stock, and the Commission's action results in the restoration of whatever equity that stock may possess. The transfer of the Clarion River Power Co. property by the actual holding company to one of its controlled subsidiaries from another illustrates the tremendous influence of holding companies over operating companies in the power industry and supports the Federal Power Commission's contention set out in its recent report that adequate Federal regulation of licensed operating companies requires regulation of the holding company in the shadow of which many of the Federal licensees live and move and have their being."

Consolidation Processes and Investment Account Manipulations

Consolidation processes and investment account manipulations are probably the most dangerous threats to intercorporate risk structures. On the one hand, amalgamations, mergers, and purchases of assets can be put through on terms which are grossly unfair to some of the constituent companies and which seriously impair all securities; on the other hand, stock control holdings and other commitments in securities can be so acquired, shifted, and reacquired as effectively to wreck the companies involved.

Amalgamations, mergers, and purchases of assets have been taking place with maddening rapidity for more than a decade. These activities have provided the vehicle for tremendous inflations of the investment accounts of many industries, but especially of the electric light and power industry. For example, the Federal Trade Commission reports that, when the Florida Power and Light Company was formed, property costing $28,213,209.01 and securities valued at $5,575,791.47, or a combined amount of $33,789,000.48, were set up on the books of the new company at $64,021,008.33, an increase of 89%.[49] In this case all securities of constitutent companies had been acquired by the promoting interests; so no problem of diversity of

[47] Federal Trade Commission: *Control of Power Companies* (1927), p. 111.

[48] 135 *Commercial and Financial Chronicle* 3164 (November 5, 1932).

[49] *Senate Document 92*, 70th Congress, 1st Session, Parts 23 and 24, p. 885.

interests arose. But the inflation that took place illustrates clearly the possibilities for injustice. If the public holds preferred or common stocks of any of the companies in an amalgamation or merger, it is possible that their equities will be diluted in the process of consolidation. This dilution will take place by overvaluing one company in comparison with another. That is, if two companies are each worth $100,000 and one of them is put into a consolidation at $200,000 while the other is put into the consolidation at $100,000, each taking like securities in the new company, a part of the equities of the latter company have been shifted to the former. This result follows because the former company now has a two-thirds interest in the combined properties whereas it held previously only a one-half interest.

Likewise, the properties of one company can be sold to another at an excessive figure. If the mortgage is open and permits the issuance of additional bonds to 75 or 80% of the "cost" of new property, such sales may dilute the security behind even first mortgage bonds.

Even though properties are not consolidated at unfair ratios or purchased at excessive prices, the consolidation process may eliminate certain protections that the security holders have contracted for. Thus the operation of after-acquired property clauses is ordinarily terminated for a merged company in case of merger and for all constituents in case of amalgamation. Restrictions on the issue of preferred stock are automatically changed by exchanging such stock for preferred stock in the new consolidated company. To illustrate, in 1922, Union Electric Light & Power Company (No. 3) of St. Louis was consolidated with Missouri Electric Light & Power Company by transfer of assets and franchises and assumption of liabilities, primarily because it had nearly reached the limits of both bond and preferred stock issues.[50] After the consolidation, the new company, renamed Union Electric Light & Power Company (No. 4), was able to create a new mortgage which had a first lien on all subsequently acquired property. In the same transaction restricting preferred stock was eliminated by being exchanged in the process of consolidation.

These weaknesses can develop, of course, in the case of any corporation; but they become especially dangerous in holding company systems because the systems own a great many companies which can be combined and recombined. The author has pointed out in detailed studies elsewhere[51] that in the electric power industry common control usually precedes consolidation by amalgamation, merger, or sale of assets. It may be added that in practically all cases of gross inflation of capital accounts, such common control has been present. This common control and these transactions between sub-systems and subsidiaries render insulated risk structures largely nugatory.

Investment account manipulations are another major weakness in risk structures. Wherever investment activities are possible, whether directly by the company or indirectly through an investment affiliate, the opportunity to drain the company of cash and valuable assets exists. The chief occasions which give rise to these drains may be classified as follows: intercorporate shifts of

[50] *Senate Document 92*, 70th Congress, 1st Session, Parts 33 and 34, p. 1035.

[51] Cf. Field, K., "Holding Corporation Control as a Provisional Form of Consolidation," 8 *Journal of Land & Public Utility Economics* 87 (February, 1932). Cf. also Field, K., "Public Utility Holding Corporations," 19 *University of Colorado Studies*, particularly p. 249ff. (June, 1932).

securities at excessive values, intercorporate shifts of good securities for bad, pledging investment holdings to obtain loans, unloading obligations of holding companies on subsidiaries, reacquisition of securities by stock market operations, and making outside commitments by subsidiary investment companies.

Intercorporate shifts of securities at excessive values were prominent in the late Insull collapse. Thus the consolidated balance sheet of National Electric Power Company, as of December 31, 1931,[52] the year when the company was tottering into bankruptcy, shows an increase in plant and investments in affiliates of more than $85,000,000, the plant figure carrying an excess over book value of more than $13,000,000. This increase was accompanied by an increase in subsidiary bonded debt of $38,000,000, of subsidiary preferred stock of $18,000,000, and of notes payable of $31,000,000. Incidentally, the controlled stocks of subsidiaries were pledged to secure notes payable; so the bondholders of National Electric Power Company can salvage practically nothing from the wreckage. The affairs of several other subsidiaries of Middle West Utilities Company exhibit a like condition. On February 9, 1933, Mr. J. W. Adams, an examiner for the Federal Trade Commission, testified that investments of the Mississippi Valley Utilities Investment Company, carried at a book value of $48,896,863 had a realizable value of about $5,658,000;[53] and on the same day Eugene V. R. Thayer, receiver for the company, filed a report in Federal District Court charging that "senior security holders of the company had been defrauded by the management which was controlled by its parent concern, the Middle West Utilities Company."[54]

Shifts of relatively strong securities for weak ones may be illustrated by the case of General Gas & Electric Corporation. On March 4, 1929, Associated Gas & Electric Company acquired control of General Gas and Electric Corporation. In the same month the directors of General Gas, under the new control, transferred the open account advances and controlling stocks of the strong subsidiaries (Metropolitan Edison Company, Northern Pennsylvania Power Company, New Jersey Power and Light Company, and Binghampton Light, Heat & Power Company) to the Associated System in exchange for Associated Electric 4½s and Associated Gas & Electric 5s.[55] Thus, holding company bonds were given the new subsidiary in place of direct equities in basic operating properties. The transaction did not rest there, however, for

> "an arrangement was made in April, 1929 under which the bonds received for the common stocks of the four companies mentioned above, aggregating $64,890,000 principal amount, were exchanged for 371,083 shares of $5 preferred stock and 400,000 shares of class A stock of Associated Gas & Electric Co., 5,878 shares of 7% preferred stock of Broad River Power Co., and 5,509 shares of 7% preferred stock of Florida Public Service Co." [56]

The result of this series of transactions was that General Gas & Electric Corporation finally held the unstable junior securities of a complicated top holding company instead of the much more stable common stocks of well known operating properties. The second transaction of itself was disastrous as can readily be seen from a comparison of security prices. On February 24, the

[52] Moody's *Public Utilities, 1932*, p. 643.

[53] *New York Times*, February 10, 1932, p. 3c.

[54] *Ibid.*

[55] 135 *Commercial and Financial Chronicle* 3353 (November 12, 1932).

[56] *Ibid.*

Associated Gas & Electric 5s of 1968, which were taken at 91⅛ in the first transaction, had a market value of 18¼; whereas Associated Gas & Electric $5 preferred, which was taken at 90 in the second transaction had a market value of 6. At the same time Associated Electric 4½s of 1953, which were taken at 87⅛ in the first transaction, had a market value of 34½; whereas Associated Gas & Electric Class A, which was taken at 57 in the second transaction, had a market value of 1½.[57]

This paper has already alluded to the fact that investment portfolios are frequently pledged to secure current loans. Such pledging can wreck any investment company and, hence, is of special significance here only to the extent that intercorporate risk structures introduce special problems. From this point of view one notes that one sub-system frequently borrows while making advances to other parts of the major system. Thus, the 1931 consolidated balance sheet of National Public Service Corporation shows a $6,590,415 increase for the year in advances to affiliated companies outside its sub-system. At the same time notes payable increased $18,388,916 and most of these notes were secured by the pledging of subsidiary company stocks and bonds.[58] In the receivership that followed shortly thereafter, the debenture holders of National Public Service Corporation found the Corporation's resources largely exhausted and the debentures fell to a low of 5¼ in June, 1932.[59] Thus it is evident that, like intercorporate shiftings of securities, secured borrowings for the benefit of affiliates may prove a substantial source of weakness to risk structures. Their primary weakness lies in the fact that the advances may prove uncollectible, thus causing a loss of assets or inability to meet the loans when they fall due.

The unloading of a holding company obligation on a subsidiary may be illustrated by the following summary of allegations in a suit for an accounting, filed against Balaban & Katz Corporation.[60]

"It is alleged in the bill that when Paramount Publix Corp., in July 1929, purchased 70% of the stock of Great States Theaters Inc., in exchange for 30,000 shares of Paramount Publix Corp. common stock it agreed to repurchase the 30,000 shares at $85 a share between Jan. 1 and 10 of this year, if the owners wished to resell. It is further alleged that in December of last year the owners notified Paramount Publix Corp. that they desired to resell their stock at the price of $85 a share. The control of Great States Theaters, Inc., had been transferred to a new corporation, Publix Great States Theaters, Inc.

"The bill charged that 'officers and directors of Paramount Publix Corp. acting in collusion and conspiracy with officers and directors of Balaban & Katz Corp. devised a plan to unlawfully saddle the obligation to rebuy the 30,000 shares of Paramount Publix on Balaban & Katz Corp.'

"Balaban & Katz, the bill alleges, paid to Paramount Publix $516,000 in cash and gave its notes for $2,034,000. The cash and notes, the bill says, were turned over by Paramount Publix to the owners of the 30,000 shares of its stock which it then received.

"The bill declares the consideration for Balaban & Katz Corp.'s payment of the money and notes to Paramount Publix was the transfer to it by Paramount Publix of 7,000 shares of common stock of Publix Great States Theaters, Inc., and Paramount Publix's rights to $337,586 dividends from Publix Great States Theaters, Inc., but it is alleged the 7,000 shares of stock were worthless. It is further alleged that 'the sole pur-

[57] *Ibid.*, February 25, 1933. The management has claimed the highest motives in these transactions and we can grant their contentions; but it is well to note that the result is the same regardless of motives.

[58] Moody's *Public Utilities, 1932*, pp. 647–648.

[59] *Commercial and Financial Chronicle*, January 7, 1933.

[60] 135 *Commercial and Financial Chronicle* 130, July 2, 1932.

pose of the transaction was to relieve Paramount Publix of its obligation to rebuy its stock.'"

This type of transaction has been both common and disastrous.

Trafficking in a company's own stock has, in recent years, been one of the most serious defects in corporate policy. It is not a defect which is peculiar to holding corporation systems; but nevertheless, a federated intercorporate structure facilitates concealment of management stock jobbing activities. Thus the new management of the Commonwealth Edison Company (in discussing a $3,752,055 surplus adjustment covering losses on stock reacquired in 1932) stated that "the directors had no realization of the extent to which the company was committed by the purchase of its own stock until the early part of 1932."[61] In this case the actual purchases had been made through Commonwealth Subsidiary Corporation, an investment subsidiary. It may be asked: If the directors do not see the situation, how much worse off is the investor?

This same company can also illustrate the possibility of draining off assets through the investments of a subsidiary investment company. Prior to 1932 the Commonwealth Subsidiary Corporation made extensive investments in corporations manufacturing trucks, conveyances, appliances, etc., and in the Chicago elevated and suburban electric railway lines. In 1932 the new management of Commonwealth Edison Company appropriated $30,000,000 from surplus to absorb the losses resulting from these commitments and announced that "the board of directors has adopted the definite policy of gradually eliminating investments of this class, and of restricting the operations of the company, so far as possible, to the generation and distribution of electrical energy."[62]

The preceding discussion indicates that consolidation processes and investment transactions offer almost unlimited opportunities to defeat risk structures. So serious has the situation become that at least one of the major holding corporation interests has made a special point of informing the public concerning cross-ownerships and loans within its system. Thus the 1932 annual report of Electric Bond and Share Company states:[63]

"Company has no funded debt, bank debt, endorsements or guarantees. It has no securities outstanding except preferred and common stocks.

"None of the holding companies (below) or their subsidiaries owns any stock of Electric Bond & Share Co. Each holding company with its subsidiaries constitutes a separate corporate group. There are no cross-ownerships of securities or loans between these groups. No company in any group owns any securities of any other company in the group except securities of its subsidiary companies, or has any loans from any other company in the group except from its parent company. No company in these groups has any bank debt, except United Gas Corp., which has $21,250,000 bank loans due July 20, 1933."

How dangerous the loopholes must be if corporations themselves find it necessary to advertise against them!

Intercorporate Loans

The three chief types of intercompany loans consist of subsidiary company deposits of cash with holding companies, subsidiary company guarantees of holding company notes payable, and direct loans and advances from subsidiary companies to holding and affiliated companies. The first type, deposit borrowing, is illustrated by the practice of the Associated Gas & Electric Company

[61] 136 *Commercial and Financial Chronicle* 1199 (February 18, 1933).

[62] *Ibid.*

[63] *Ibid.*, p. 485 (January 21, 1933).

System. In this system the operating companies deposit all cash receipts "in local banks to the credit of Associated Gas & Electric" Company and, in lieu of recording cash on their books, set up an account receivable.[64] The second type of transaction, subsidiary guarantees of holding company notes, is illustrated by the case of American Commonwealths Power Corporation. In 1931 the Birmingham Gas Company, an indirect subsidiary of American Commonwealths Power Corporation, became contingently liable on the latter company's notes to the amount of $400,000.[65] In 1932, with the American company in receivership, the Birmingham company had to take up the notes.[66] The third type, direct loans and advances, is the most important and most extensive type of lending device. Perhaps the most startling case of such advances that the author has noticed is that of the Electric Management and Engineering Corporation. When this Company was petitioned into bankruptcy in July, 1932, assets were listed as $14,000,000, of which $13,004,500 were due on notes of its bankrupt parent corporation, the National Electric Power Company.[67] Table VII shows the changes which took place during 1931 in the advances of companies in the Middle West Utilities Company system, which was at that time tottering on the verge of receivership.

TABLE VII. INTERCOMPANY ADVANCES: MIDDLE WEST UTILITIES COMPANY SYSTEM, 1930–1931.*

Name of Subsidiary	Advances	
	1931	1930
Central Power & Light Co..	$1,278,083	.....
Southwest. Gas & Elec. Co..	1,200,000	.....
Tide Water Power Co.....	619,189	.....
Public Service Co. of N. H.†	600,000	.....
Lexington Utilities Co.....	2,282,735	$2,148,993
Jersey Central P. & L. Co....	608,991	146,336
Keystone Pub. Service Co.†.	889,269	361,790
Penn Central L. & P. Co.†..	2,531,471	1,899,076
Virginia Public Service Co.†	2,059,905	3,314,483
National Public Service Co.†	17,192,627‡	12,525,997‡
National Pub. Service Corp.†	10,603,486	4,013,071
Seaboard Public Service Co.†	12,952,229	1,115,774

*Moody's *Public Utilities, 1932.*
†Consolidated balance sheet.
‡ Composite item, including some extra sub-system investments.

Conclusions

In summary, separate financing of varied risks is sound if the risk structures can be securely insulated. However, up to the present time, lax laws and too liberal corporate charters and security covenants, coupled with insufficient publicity, have permitted incompetent and ruthless managements effectively to nullify the principal protections of risk-segregating devices.

A discussion of the solution to these difficulties is not within the scope of this article, but the following points of attack seem pertinent: (1) Elimination of present-day liberal consolidation provisions in bond covenants and reversion to the older requirement that, in case of consolidation, the bonds be redeemed. This might be made somewhat more flexible by allowing a stated majority of the bondholders to modify the covenant. (2) Return to the old type of collateral trust indenture providing for actual deposit of collateral securities with the trustee, for rigid restrictions of substitutions of collateral, and for rigid limitation of the right of the holding corporation to vote pledged securities in behalf of fundamental changes in corporate policy or structure. (3) Limitation of the charter powers of corporations both by legislative and corporate action. (4) Thorough going publicity of corpo-

[64] *United States Daily*, July 29, 1932, p. 5.

[65] Moody's *Public Utilities, 1932*, p. 2260; *Annalist*, June 10, 1932, p. 957.

[66] Moody's *Public Utilities, 1932*, p. 2258.

[67] *Annalist*, July 29, 1932, p. 147.

rate accounts coupled with audits by auditing firms representing the different classes of security holders. There is much to be said in favor of the English practice of having the stockholders elect the company auditor. However, audits for different classes of security holders should be more sweeping than they are in English practice. (5) Uniform accounting under government regulation, statements to be made under oath, and a penitentiary sentence to be imposed for false reporting. If some of these remedies were adopted in all essential details, some of the others would not be necessary. Some, it will be charged, would slow up corporate development. Undoubtedly this is true, but perhaps we are paying too high a price for speed.

Some Aspects of Rural Land Tax Delinquency in Missouri

By CONRAD H. HAMMAR

AS apparently has been true in many other states, the problem of land tax delinquency in Missouri has come into public attention only in recent years. Prior to 1920, with agriculture relatively prosperous, property taxes low, and land and farm real estate prices rising rapidly, land tax delinquency in those counties for which data are available was essentially negligible. Thus, in 1919 in Johnson County, which is primarily rural, the currently delinquent taxes on land alone amounted to only $1,778. The total state and local taxes levied on real property (including town lots) in Johnson County totaled $178,628 in 1919. The currently delinquent land taxes, therefore, amounted to only 1% of the total tax on real property and, we may assume, for the most part were cancelled by payment prior to the next tax-gathering period. Indeed, so small a volume of delinquency may well have resulted almost entirely from errors in assessments, failure to notify new owners, or failure of owners to remember the date when penalties for late payment began. By 1931 delinquent taxes in Johnson County had risen to $28,652, or to approximately 9% of the total real property tax burden of that year.

For the rural areas of the State the growth of delinquency as it relates to all types of taxes collected for the state government may be judged by reference to Chart I. The percentages of current state taxes uncollected are for 13 rural counties selected as representative of the various type-of-farming areas of the State.[1] Inasmuch as delinquency in the case of taxes other than those on real property is unimportant for present purposes, the data of Chart I fairly represent the uncollected taxes on farm and village real estate in the several rural counties.

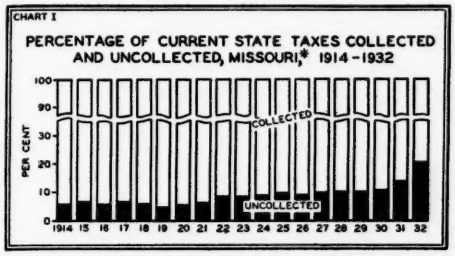
For the period 1914–1921 the percentage of uncollected current state taxes was small, never amounting to as much as 7% of the total. From 1922 to 1930, inclusive, the level of uncollected taxes was lifted approximately three points as contrasted with the 1914–1921 average, or from approximately 6 to approximately 9%. During this period there was a persistent upward trend. In 1931 and 1932 uncollected taxes rose again, the 1932 figure being somewhat more than double the 1922–1930 average and practically four times the average for the war-period years.

The geographical distribution of delinquency in the State, as evidenced by uncollected state taxes,[2] is given on Chart II. The general high level of delinquency throughout the State (only nine counties collected more than 90% of their total levies) is a result, of course, of the current depression. Data for previous years reveal that in more normal years most counties collect more than 90% of state taxes. Thus, even in the years 1929 and 1930, 63 of the 114

[1] These are the same counties for which data on real estate values and assessments have been collected and analyzed. See *Missouri Agricultural Experiment Station Research Bulletins*, Numbers 154, 169, and 172.

[2] Taxes become delinquent and penalties are imposed unless payment is made on or before December 31 of each year. Reports of delinquency, both state and local, are, however, made as of the following March 1.

counties of the State collected 90% or more of these taxes, as contrasted with nine which were able to achieve this record in 1932.



*Simple averages of percentages of current state taxes uncollected in 13 representative rural counties, viz.: Atchison, Barton, Callaway, Franklin, Harrison, Johnson, Miller, Newton, Pemiscot, Polk, Ralls, Reynolds and Sullivan.

Chart II reveals two great areas of unusually heavy delinquency. The first of these embraces the seven counties of the southeast lowlands (See Chart III), where no county collected as much as 70% of its state taxes and where in four counties these uncollected taxes were more than 40% of the state taxes levied. These lowlands are an unusually fertile and productive area but are burdened with heavy benefit taxes both for levees and for drainage ditches. A large part of the delinquency of state taxes in this area results from the very high level of all taxes, these benefit assessments included.

The second area of heavy delinquency is in the Ozark highlands immediately adjacent to the southeast lowlands and centering about Carter County, where the percentage of land in farms is small and where the average fertility of the land in farms is low. Peculiarly, in the Ozark border area, particularly in those counties fronting the Missouri River (namely Cole, Osage, Gasconade, Franklin, Warren, and St. Charles Counties), the percentage of uncollected state taxes is less than in either the more rugged portions of the Ozarks or the better farming areas north of the Missouri River. Several factors have apparently contributed to the comparatively good record of these border counties, the more important of which include the type of farming (largely dairying), a low mortgage indebtedness, and below average tax rates.

For a few typically rural counties (See footnote to Chart I) data on the acreage of lands delinquent for the taxes of 1930 and prior years are available. These data (Table I) corroborate roughly the facts of the geographical distribution of delinquency as revealed by Chart II. The greatest percentage of total area delinquent was in Pemiscot County in the southeast lowlands. Newton County in the southwestern part of the State but on the edge of the Ozark highland[3] stood second with 25.6% of its acreage delinquent for a year or more. The heavy delinquency in Atchison County, in the northwestern corner of the State and in one of the most fertile areas of the State, is somewhat of an anomaly, but becomes explainable in the light of the data of Table II which shows the delinquency in that County to be almost

TABLE I. PERCENTAGE OF AREA DELINQUENT FOR TAXES OF 1930 AND ALL PRIOR YEARS IN SEVEN MISSOURI COUNTIES

County	Total Area (Acres)	Acreage Delinquent for Taxes of 1930 and Prior Years	Percentage of Area Delinquent
Atchison.....	337,920	82,323	24.4%
Callaway.....	517,120	70,914	13.7
Sullivan.....	415,360	43,257	10.4
Barton.....	381,440	44,908	11.8
Pemiscot.....	291,840	136,784	46.9
Newton.....	398,080	101,921	25.6
Polk.....	410,240	70,557	17.2
Weighted Average..	.....	.....	20.0

[3] Preliminary tabulations of acreages delinquent in Reynolds County in the mid-Ozark section show 374,302 acres, or 70.1% of the total area of the County delinquent for the taxes of 1930 and prior years.

TABLE II. ACREAGE AND PERCENTAGE OF TOTAL ACREAGE TAX DELINQUENT FOR VARYING PERIODS IN FIVE MISSOURI COUNTIES, AS OF MARCH 1, 1931

County	Acreage Delinquent				
	1 Year	2 Years	3 Years	4 Years	5 Years
Atchison	82,083	.....	240	.....	.....
Barton	30,653	11,487	2,163	72	83
Callaway	48,723	15,713	3,154	2,277	1,047
Newton	69,399	18,113	7,425	2,860	2,100
Sullivan	30,646	9,666	2,022	565	357
Total	261,504	54,979	15,454	5,774	3,587
Percentage	76.6%	16.1%	4.5%	1.7%	1.1%
		23.4%			

wholly current or of less than one year's standing.

In fact, as far as the data of Table II are representative, not a very large percentage of the land tax delinquency in Missouri is of long standing. For the five counties for which data have been tabulated, 76.6% of the total cumulated delinquent acreage was of a current nature, i. e., of less than a year's standing. Current delinquency plus that in its second year constitutes 92.7% of the total, leaving only 7.3% to be counted as of long standing and thus more likely to result in ultimate tax foreclosure. Civil suit to enforce the payment of taxes may be brought by the collector and county

CHART II

PERCENTAGE OF CURRENT STATE TAXES UNCOLLECTED IN MISSOURI, 1932

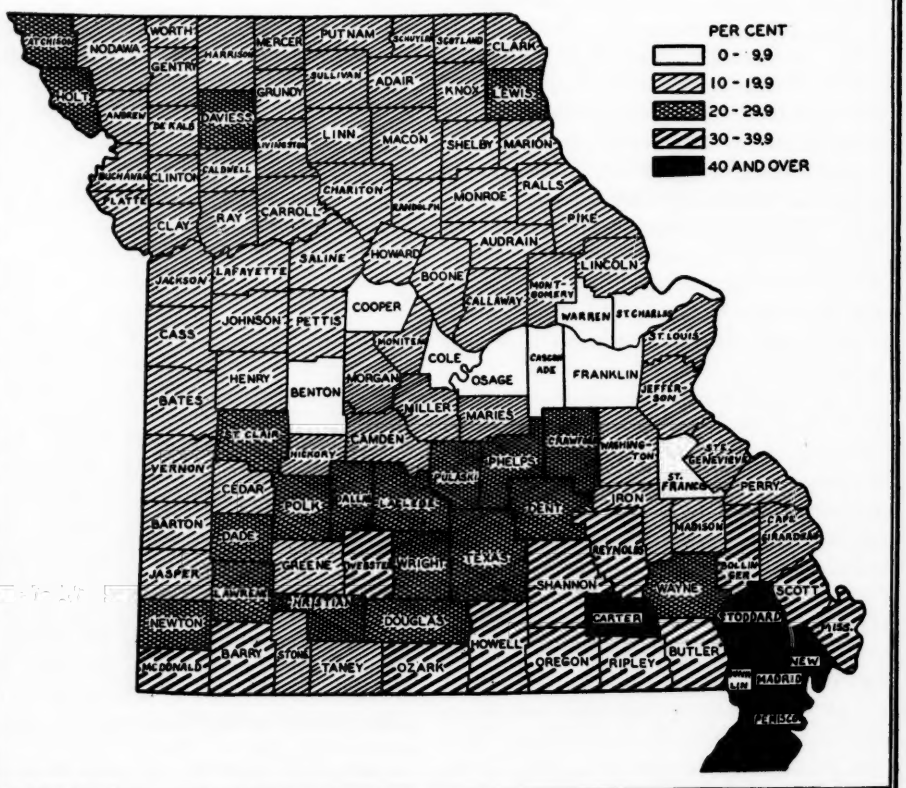


CHART III

TOPOGRAPHIC REGIONS OF MISSOURI

court after the taxes have been delinquent for a year. Taxes unpaid for more than five years are outlawed by statute.[4]

If these delinquent acreages are classified not only upon the basis of the period of delinquency but also upon the basis of quality of soil, two facts of some importance may be noted. First, the proportionately poorer soils show a greater delinquency than the better soils. Second, as the period of delinquency increases, the percentage of the better soils delinquent decreases, while the percentage for the poor soils increases, as is revealed by the classification of delinquent Callaway County lands in Table III. Thus, while the distribution of first-year delinquency corresponds pretty well with the actual distribution of soils, that for the fifth year indicates a clear leaning toward the poorer types of soil. Tabulations for other counties show similar tendencies.

TABLE III. PERCENTAGE DISTRIBUTION OF DELINQUENT ACREAGES CLASSIFIED ON THE BASIS OF SOIL TYPES, CALLAWAY COUNTY DELINQUENCY AS OF MARCH, 1931 FOR 1930 AND PRIOR YEARS

Class of Soil	Actual Distribution of Soil	Period of Delinquency				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
Class I Upland	49.2%	42.6%	33.5%	38.7%	25.8%	21.1%
Class II Upland	24.2	21.8	25.1	27.5	25.8	29.4
Class III Upland	26.6	35.6	41.4	33.8	48.4	49.5

These data on the status of land tax delinquency establish fairly well certain conclusions. First, delinquency is apparently universal; no county escapes its effects. Second, it is growing in volume and the growth has been particularly rapid during the period since 1929. Third, both between counties and within

[4] For provisions regarding the disposition of persistently delinquent tracts see p. 181 below.

counties delinquency is most prevalent on the poorer soils or poorer quality lands. An exception to this last statement, however, must be made in the case of the southeast lowlands where delinquency on fertile lands is fostered by unduly heavy levee and drainage benefit taxes. Finally, the so-called current delinquency or that of less than a full year's standing far overshadows that of a longer period and on only a very small percentage of the lands are taxes allowed to go unpaid for such a period that the county is forced to foreclose in order to protect its interests.

Causes of Delinquency

Causes of land tax delinquency in Missouri are numerous and may be divided into two categories: those which are national or indeed international in character, and those peculiar to the state or locality.

The first and doubtless the major cause is the universal depression in agriculture which dates back to 1920 and has only been intensified since 1929. In 1918 and 1919, when land tax delinquency was at a low ebb, agriculture received 18.5%[5] of the national income. By 1928, the last date for which reliable estimates are available, the share of agriculture in the national income had shrunk to 9.3%. Furthermore, between 1919 and 1928 the absolute income going to agriculture declined about one-third. That is, the realized income drawn by individuals from agriculture declined from $12,182,000,000 to $8,109,000,000. Delinquency in those Missouri counties for which data are available is unmistakable evidence of the effects of this decline in absolute and relative farm income.

A further factor of nation-wide importance is the growth of debt, coupled with the decline in prices and the rise in the value of the dollar. In 1910 the farm mortgage debt in Missouri amounted to $202,650,000 according to data published by the Bureau of Agricultural Economics.[6] By 1928 this debt had been increased to $447,351,000 and is probably somewhat more than $400,000,000 at present. Using the 1910–14 level as the base, the wholesale commodities price level in 1910 was 103, while that for 1932 has averaged about 95. The average for 1933 will probably be still lower. Even more significant in relation to the pressure of farm debt is the fact that the index of the ratio of prices received by farmers to that of prices paid by farmers, again using the 1910–14 average as a base, was 106 in 1910, while that for 1932 was approximately 53, or only half as great. Significantly, during the 1910–1932 period the farmers' debt not only doubled but the value of the dollar increased and the price relationships under which the Missouri farmer labored to obtain his income have, for the time being at least, taken a very unfavorable turn. The great rise in fixed costs for debt service during a period when incomes have declined has undoubtedly reduced farmers' ability to pay taxes. However, it is to be remembered that the funds received by farmers during the creation of this mortgage debt have been used in considerable part for the improvement of farm lands. These improvements taken by themselves add to the capacity to pay taxes and are probably also to be counted as a factor in explaining the small percentage of delinquency that is of a long standing nature.

The growth of taxes is a nation-wide as well as local cause of increasing tax delinquency. Per-acre property taxes in

[5] See Table xv, p. 98, King, Willrord, I., *The National Income and Its Purchasing Power*, National Bureau of Economic Research, 1930.

[6] *U. S. Department of Agriculture Technical Bulletin*, Number 288, Table 2, p. 3.

Missouri, according to recent releases[7] of the Bureau of Agricultural Economics, increased from 14 cents per acre in 1913 to 47 cents in 1929 and have since declined. While Missouri farm property taxes have been low[8] relative to the average tax for the states of the Northwest Central States, including in addition to Missouri, the States of Iowa, Minnesota, Kansas, Nebraska, North and South Dakota, they have risen more rapidly during the 1913–1930 period than have those of any other state in this division. A great increase in taxes is probably an even more potent cause of tax delinquency than a high but less rapidly rising level of taxes.

In respect to these tax increases it is well to recollect, however, that by far the greater share of property taxes are used for local purposes and to contribute to local improvements. In so far as these taxes have improved local public services, particularly roads and schools, they should be recognized as making some contribution toward improving the income-earning and tax-paying power of the community.

A factor of more distinctly local importance in its effect on land tax delinquency is that of unequal assessment levels. These assessment inequities are of two varieties. First, there is some evidence that farm and village properties in Missouri have been overassessed relative to city properties during the 1921–1932 period, as is suggested in Table IV.[9]

Assessments tend to lag. When values are rising, assessors and boards of equalization are reluctant to raise assessments in step with value increases. The same reluctance in, if anything, a somewhat heightened degree appears to occur when values are falling. During the period 1921–1930, values of city property generally were rising, while farm land values were falling. As a result, by 1929 city properties in Columbia were assessed at much less in relation to sales values than were farm properties in Boone County, or in Johnson and Harrison Counties for which figures are also available.

TABLE IV. ASSESSED-SALES RATIOS FOR BOTH URBAN AND FARM PROPERTIES IN BOONE COUNTY* AND FARM PROPERTIES ALONE IN JOHNSON AND HARRISON COUNTIES, 1910–1932

Year	Boone County				Johnson and Harrison Counties
	Farm Properties		Urban Properties		Farm Property
	Number of Sales	Ratio	Number of Sales	Ratio	Ratio
1910	330	20%	276	24.0%	.....
1911	258	19	213	25.0	.....
1912	257	19	236	25.0	.....
1913	282	19	243	27.0	.....
1914	235	19	217	27.0	17.3%
1915	...	....	46	21.7	17.1
1916	...	....	50	30.1	17.7
1917	...	....	46	23.6	16.2
1918	...	....	49	70.3	17.7
1919	...	....	47	59.1	16.8
1920	...	....	51	56.5	19.0
1921	...	....	50	49.4	56.9
1922	...	....	49	42.1	66.7
1923	101	65	335	55.0	70.3
1924	75	77	281	55.0	71.3
1925	98	77	265	54.0	76.9
1926	70	63	222	52.0	67.3
1927	89	62	162	49.0	64.1
1928	75	59	117	44.0	68.9
1929	50	87	46	32.1	65.9
1930	34	75	39	44.1	84.2
1931	26	96	36	48.1	73.7
1932	25	89	28	53.9	....

*The data for the years 1910 to 1914 and the years 1923 to 1928 inclusive were taken from pp. 18 and 19, "The Ratio of Assessed Value to Sales Value of Real Property in Boone County, 1910–1914 and 1923–1928," a thesis submitted at the Unversity of Missouri by Elgin E. McLean.

In addition to this overvaluation of farm as contrasted with city property, there is also a tendency, sometimes pronounced, for poorer soils to be assessed at a higher ratio relative to sales values than better soils. In one county, Harrison, the lower quality Shelby soils

[7] *Farm Real Estate Taxes, 1913–30*, Bureau of Agricultural Economics, release of August, 1932.

[8] *Ibid.*, and see also *The Fiscal Problem in Missouri*, National Industrial Conference Board, 1930, Ch. VII.

[9] For a more extended discussion of the relative overassessment of rural lands, see *Missouri Agricultural Experiment Station Research Bulletin*, No. 169 (June, 1932).

were assessed at 83.5% of sales value,[10] compared with 70.5% for the higher quality Grundy soils. In other words, the poorer soils were in this case assessed, on the average, 18% higher in relation to sales values than were the better soils. In other counties the discrepancies were not as great. In this fact of the over-assessment of the poorer lands we have a potent cause of delinquency, since not only do these lands afford smaller returns for equal effort, but also upon them the less able farmers tend to congregate.

While discrepancies because of unequal assessments are causes of delinquency chiefly within counties, differences in tax rates operate as a cause between counties. Average county tax rates vary widely and are commonly highest in the Ozarks where soils are poor and per capita assessed valuations are low, and highest in northwest Missouri counties where soils are excellent and assessed valuations per capita high. Thus, in Atchison County in the extreme northwest corner of the State rates have persistently been low and averaged for the years 1926 to 1930, inclusive, only 81 cents per $100 of assessed valuation. In Iron County in the heart of the Ozark region, on the other hand, rates have been consistently high and averaged for the same five-year period $1.89 per $100 of assessed valuation. Such figures as have been obtained up to the present time indicate that delinquency in the Ozark counties,[11] particularly that of long standing, is much greater than in other areas of the State excepting southeast Missouri, where an acute drainage tax problem complicates the situation. In Reynolds County (adjacent to Iron) sheriff's sales of tax delinquent land were greater than in any other of the 13 counties for which data have been gathered in a study of land values now under way by the Department of Agricultural Economics of the University of Missouri. It is significant that the tax sales in Reynolds County during 1931 and the first eight months of 1932 totaled 109 parcels embracing 22,314 acres and were greater than in all the other 12 counties combined.

Other causes of delinquency of some note, though of lesser importance than those already discussed, are bank failures, the present system of lump-sum tax collection, and inactive collectors who stand to gain increased fees under present practice if taxes are allowed to go delinquent instead of being paid on time.

A Program for Curbing Delinquency

In the preceding discussion of causes, certain cardinal elements of the program that must be embraced, if land tax delinquency is to be curbed or reduced, are easily discernible. Clearly very important parts of such a program lie beyond the powers of any state or local government and must be made part of our national program if they are to be effective. For instance, no one thing that could be done would have so salutary an effect in reducing land tax delinquency as the restoration of a measure of prosperity for our farming population. Indeed, unless the general level of farm prices rises considerably, delinquency is almost sure to increase despite anything that state and local officials do. Agricultural prosperity is very closely associated with business or industrial activity and can be expected to improve if and when a more normal business situation recurs.

The acute situation with regard to farm debt will also hardly be settled by the pressure brought by the farmers of any single state and is, hence, also na-

[10] *Ibid.*, Table 14, p. 25.

[11] See Chart II.

tion-wide in scope. Suspension of mortgage foreclosures, which has almost been forced in certain states and in certain Missouri counties, is only a temporary expedient rather than a solution of the problem. Its value lies only in the fact that it affords time for organization of protective committees and perhaps one important element of the program for curbing land tax delinquency is to encourage the setting up of local protective associations to act as liaison committees between contending debtor and creditor groups. If the pressure of debt is to remain as heavy as it has been for the past two years, it can be expected to mitigate greatly the effects of such steps as are taken to reduce tax delinquency. It is equally pertinent to note, however, that the pressure of taxes will also act to mitigate such effects as are forthcoming from the adjustment of farm mortgage debt.

As far as the efforts within the State to curb land tax delinquency are concerned, perhaps the most important single consideration is the problem of a broader tax base for certain functions of government. Missouri has gone far in placing her roads in the hands of the State and perhaps needs to go but little farther. Some progress has also been made in broadening the tax base for education. Unless, however, the idea of providing a more adequate schooling for the children of the poorer rural sections is given up, some further adjustments must apparently be made. The most inadequate schools both from the standpoint of equipment and the length of the school year are to be found principally in the sparsely settled areas of the Ozark highlands. Recent economic developments make it quite improbable that much of this area will, within any reasonable time, support so large and prosperous a population as to enable adequate schools to be provided solely by local means. Tax rates in the counties of this area are already at twice the level in other more wealthy areas in the State and reflect the intense local effort to keep up educational standards.

Perhaps settlement in parts of these counties is uneconomic and it may be that the wiser method in dealing with tax delinquency in these regions would be to control and concentrate settlement. There is the further possibility that the neglect of forestry has been a major cause of low tax-paying ability of Ozark rural areas and that the proper way to curb tax delinquency there is to seek a more economic system of land utilization. At present, farmers in these sparsely settled Ozark counties use about a third of their land for crops and neglect, and often shamefully abuse, the other two-thirds. Efforts to curb delinquency must take into account the critical need for improving the income-producing power of the now nearly uncultivated woodlands of the Ozark highlands.

State policy with regard to delinquency in these poorer rural areas may indeed take any one of three courses. First, they may be let alone to shift for themselves as best they can. This method affords no solution of the problem. It either ignores the existence of the trouble or is willing to depend upon individual initiative resident within the area to find its own way out. Unfortunate for such a dependence, however, is the fact that these areas provide the poorest educational facilities within the State and the needed training to devise means of adjustment are, therefore, chiefly lacking.

Second, the State may adopt an opposite policy of rigorous control of economic life within these areas, and by taking over these lands close them for

settlement thus eliminating delinquency once and for all. Or finally, the State may adopt an intermediate course of providing leadership and information to stimulate intelligent economic adjustment. That is, while the people within the area may not be able to devise means of bettering their incomes and tax-paying ability, the State may institute studies which will bring the information to hand or at least point to the adjustments that should be made.

An outline for a state program of leadership should include several items. First, a study of the economic possibilities of combined farming, grazing, and forestry, to take the place of the indifferent cropping and grazing and the almost complete lack of genuine forestry, is a starting point. Public participation either in the matter of providing adequate fire protection or, if that is not sufficient, actual ownership, control, and operation of timber tracts by the State would need also to be considered. Private enterprise has not so far turned the trick, and it may not be able to do so in the future.

As a second step, a consideration of the form and functions of local government could be made highly illuminating. The form of government suitable in northwest Missouri, where assessed valuations per capita average approximately $2,000, may not be suitable in the Ozark region where per capita valuations average only about $500. Enlargement of the counties by consolidation may reduce costs. If consolidation proves politically unfeasible, a functional realignment may be sought. That is, several counties may cooperate in providing an almshouse. A single superintendent of schools might be made to serve two or even three counties. Other offices might be combined and some actually eliminated. A recent study of assessments of rural real estate in Missouri made by the Department of Agricultural Economics of the College of Agriculture ventures the judgment that the job of assessing could be made much cheaper at the same time that it was being greatly improved, if a system of district assessment with appointive supervisors of assessors was adopted. If, by the rationalization of government, costs can be lowered, delinquency should decline.

As a third item of this state program, it is pertinent to suggest a critical review of our system of property taxation not only in the matter of assessments, but also in relation to the incidence of the taxes so levied on various classes of property. Assessment studies made in a large number of states show an unequivocal and universal overassessment of the lower valued properties and lands. The Missouri study [12] developed clearly an overvaluation of poorer properties, poorer soils, and of rural as contrasted with urban properties. A correction of these faults by a supervisory system of assessment can be initiated only by the state, but if put into effect should be of considerable aid in curbing delinquency.

In respect to the incidence of taxation the question may well be asked whether the assumption that all classes of property should be taxed in exactly the same manner is tenable. A tax suitable to ordinary agricultural and business property need not be suitable and often is not suitable to forestry, grazing, or even to mining property. Greater diversity than it now possesses is needed in the Missouri tax system and adapting of the tax changes to various classes of property may aid in reducing delinquency. Initiation in this matter lies with the state

[12] *Missouri Agricultural Experiment Station Research Bulletin*, Number 169.

legislature as was also true in the case of assessment reform.

In the matter of instituting a system of planned land use the state must also take the lead. Certain other states, notably Minnesota and Wisconsin, whose consideration of the problem of delinquency antedates that of Missouri, have found that despite all steps which have been taken some land is constantly slipping from the tax rolls into the hands of the county or state as the case may be. In Missouri no adequate provision for handling such persistently delinquent lands, a large acreage of which presumably exists in certain Ozark counties, has so far been made. In Minnesota and Michigan such lands revert to state ownership and in Wisconsin to the county. In this latter State much encouragement has in the immediate past been given to state, county,[13] township, and even school district forests maintained upon lands which have reverted, because of tax delinquency, to public ownership. Where provisions are made for public control, certain systems for land zoning also become pertinent. So far the Missouri General Assembly has not seen fit to take cognizance of these persistently delinquent lands and has made no provision for bringing them under public control even if private ownership has obviously failed to find a remunerative use for them.

Other steps for the control of delinquency, depending on state initiative, which are somewhat less important than the foregoing but still of some significance, are: (1) the revision of banking laws in the interests of greater deposit safety; (2) a change in the system of collecting taxes so that taxpayers may pay in installments rather than as a single lump sum; (3) shortening the period between assessment of the property and collection of the tax; and (4) revision of collectors' fees to stimulate greater interest in full current collection and a more prompt suing out of public claims where property is permitted to become delinquent.

Most of what is to be done with regard to land tax delinquency in Missouri must be undertaken by the state because it is in state hands that the power lies. There are, however, a number of things that can be accomplished by the county. Indeed, in Wisconsin where delinquent lands after a period revert to them, the counties are taking a most active part in planning future courses of action to prevent recurring tax delinquency. For instance, in Marinette County, Wisconsin, a county forest embracing 88,193 acres[14] has been established and the lands entered under the Forest Crop Law of that State which provides that 10 cents per acre shall be returned to the local government for each acre entered under the law. Wisconsin counties are also permitted by state law to zone lands for agriculture, forestry, recreational, and other uses.

In Missouri the necessary state legislation to enable such action by the counties has not been enacted. In the meantime, however, counties may concentrate on various measures of governmental economy such as the elimination of unnecessary road and school districts, unneeded county offices, and the like, and can lay the ground work for much progress in consolidation of counties or the promotion of a functional realignment as suggested in foregoing paragraphs.

[13] See "Wisconsin County Forest Program," F. G. Wilson, *Journal of Forestry*, February, 1932.

[14] *Ibid.*

Uniform Rate Areas and Current Judicial Attitudes

By WALTER E. CAINE

SHOULD rates for electricity be made uniform for all towns of similar size and characteristics served by one company, or should separate rate schedules be designed for each community? This problem of a proper rate-making unit or area has recently been a major issue in utility regulation in Indiana and in litigation before the United States Supreme Court. Although the opinion of the Court on January 9, 1933, in the so-called "Martinsville case" (*Wabash Valley Electric Co.* v. *Ralph M. Young, et al.*, 287 U. S. 488), has settled the issue in Indiana for the time being, the problem is chronic and a survey of Indiana's experience may prove useful elsewhere.

The Martinsville case itself was probably the first major one involving territorial rates in the State. For the genesis of the case it is necessary to go back four years to the opinion of the Indiana Commission, issued in January, 1929, under the title of *Jap Jones, et al.* v. *Wabash Valley Electric Company*.[1] This investigation was the result of a petition signed by 17 citizens of the City of Martinsville, patrons of Wabash Valley Electric Company, alleging the rates of the Company in Martinsville to be so unreasonable and excessive as to produce an excess return "on the fair value of the property of respondent devoted to the use of the public in the city of Martinsville." Such an allegation obviously called for a determination of the fair value of the Company's property used and useful in providing service to Martinsville, as distinct from the value of property used and useful in providing service to the 50 or 60 other communities served by the Company. The Company objected to the limited determination asked by the petitioners, maintaining that the numerous transmission lines and interconnected power sources owned and operated by it in serving its entire market were all used and useful to all cities, towns, and districts served. Consequently, they held it "impossible to fix a specific cost to any community or district without considering it in relation to all other districts, communities, and persons served by said respondent throughout its system." The Company argued further that the high grade of service rendered would be impossible without this interdependence. It therefore insisted that the entire system be valued for the purposes of the Martinsville complaint. The Commission, however, took issue with this demand of the Company, basing its action primarily upon the Shively-Spencer Utility Act,[2] which provides for utility regulation in the State. It interpreted this act as intending to preserve for any local community or for any 10 local patrons the right to complain and be heard, "without incurring the burden of resisting the unreasonable and unbearable expense of a rate case involving all other communities served by any utility which owns transmission lines for service of many communities."

[1] P. U. R. 1929 B 561.

[2] *Indiana Statutes*, Chapter 94.

In order to demonstrate the unreasonableness of the Company's contention that the property and plant in Martinsville should be considered in its relation to the entire system, the following example was offered by the Commission:[3]

"Assume that a petition was filed for a reduction of rates by the City of Martinsville. Would not this petition inevitably lead to an adjustment of rates (if any change were made) in every one of the fifty or sixty cities, towns, and villages served by the Wabash Valley System? In some cases the rate might be fair, yet all would have to be changed to conform to the needs of the entire system. The city of Martinsville would have no interest in the city of Spencer, yet by filing a petition Martinsville, according to respondent, would set in motion machinery which would directly affect every patron of the utility served in the City of Spencer."

The Commission therefore found that it was unnecessaryto appraise the entire system of the Company, choosing rather to determine the cost of energy delivered at the "gateway" of Martinsville, plus a fair value of the Company's property within that city. A very simple method of allocating the cost of generation and transmission was then selected. Dividing the total cost of generation and transmission (including depreciation, taxes, and return) for the year ending July 31, 1927 by the total number of kilowatt hours sold from the loop system during that period, an average cost of $.0172 per kilowatt hour at the gateway of Martinsville was obtained. To this was added local distribution costs within the limits of Martinsville. This method served to prevent Martinsville and other communities on the loop from being penalized by the action of the Company in selling two-fifths of the system's output to its affiliates at a price which did not include a portion of the allowable return. The Company's assertion that this factor should be taken into account in the determination of a price at the gateways of the various communities was overruled by the Commission as unreasonable.

The result of this order was the establishment of a reduced schedule of rates for the City of Martinsville.[4]

In June, 1930, the City of Bloomington, Indiana, filed a petition with the Commission against rates charged in that city by Interstate Public Service Company, with much the same purpose in mind as that of the City of Martinsville. This petition was followed in May, 1931 by a cross petition of Public Service Company of Indiana (formerly Interstate Public Service Company), praying for a complete adjustment of its gas and electric rates in the section of its territory known as the "South System," which area included the City of Bloomington. The petition of the utility pointed out the intricately interconnected character of its "South System," together with the advantages derived therefrom, and concluded that its customers in that territory were entitled to substantially the same rates. This is obviously a request for a uniform rate area, in direct contrast to the Commission's opinion in the Martinsville case, where the community was defined as the unit for rate making. Consequently, when a motion of the original complainants to strike out the cross petition of the utility was received by the Commission, it is not surprising that the motion was sustained by a majority vote.[5] It is worthy of note, however, that the de-

[3] P. U. R. 1929 B 561, at 578.

[4] Harmon and McIntosh, Commissioners, concurred in this opinion. McCardle and Ellis, Commissioners, not voting.

[5] *City of Bloomington et al. v. Public Service Commission of Indiana*, P. U. R. 1932 A 177. Order issued August 17, 1931.

cision of the majority of the Commission in this matter was accompanied by a lengthy opinion of the two dissenting commissioners, upholding the reasoning expressed in the utility's cross petition that the entire "South System" was the logical rate-making area, rather than the local municipality.

The dissenting commissioners (Cuthbertson, Commissioner, and McCardle, Chairman) surveyed the provisions of the Shively-Spencer Act and reached the following conclusion, in direct conflict with the interpretation expressed in the Martinsville decision just discussed:

" . . . the only reasonable construction that can be placed upon that law is that the legislature contemplated that a public utility was to do business and furnish service to the public within a territory covered by the holdings of that utility and it is very clear that it was not contemplated by the enactment of the Shively-Spencer Act that the property of a public utility situated within any specific municipality or other political boundary line was to be treated as a unit for rate-making purposes, but that the unit for such purposes was to be the entire property and territory served by such utility, so interconnected as the 'South System.' "[6]

The dissenters stated further that, " . . . even though it might require a system-wide investigation to fix an equitable rate . . . those principles of non-discrimination, reasonableness, and equitable adjustment of rates should never be sacrificed by arriving at mere conjectures in attempting to reserve unto a municipality the right to say that a unit for rate-making purposes should be measured by the political boundary lines of that municipality."[7]

The above order dismissing the cross petition of Public Service Company of Indiana was issued August 7, 1931. On the 29th of the same month, the same utility filed with the Commission an "original" petition requesting an adjustment of its electric rates for the 76 cities and towns and adjacent territories in 24 counties. This was the same area referred to in its cross petition in the Bloomington case. The new petition indicated that many different rates and rate structures were at that time in effect in the area in question and that many of these rates were unreasonable and unjustly discriminatory. In a supplementary petition filed three months later, the utility set forth a proposed rate schedule which it declared would be reasonable and which would eliminate the discriminatory features of the rate structure then in force. The effect of the proposed rate change would have been to cut the revenues from the indicated classes of service as follows:

Residential Service	$159,906
Commercial Service	104,085
Power Service	106,379
Total Decrease	$370,370

The Commission in its decision in this matter, dated January 22, 1932,[8] found that the proposed residential rate was inequitable because it would give the reduction to large users and would increase the bills of many small consumers. The Commission therefore set up its own rate schedule, which, it estimated, would reduce the Company's revenues as follows:

[6] *Ibid.*, p. 199.

[7] *Ibid.*, p. 202. In support of his contention that rates should be considered on an area basis, Commissioner Cuthbertson cited the following cases: *St. Louis & S. F. R. Co. v. Gill* (1895), 156 U. S. 649,667, 39 L. ed. 567, 673, 15 Sup. Ct. Rep. 484, 491; *Puget Sound Traction, Light & Power Co. v. Reynolds*, 244 U. S. 574, 61 L. ed. 1325, P. U. R. 1917 F 57, 37 Sup. Ct. Rep. 705, 5 A. L. R. 13; *New York Telephone Co. v. Prendergast* (1929), 36 F. (2d) 54, P. U. R. 1930 B 33; *United Fuel Gas Co. v. Kentucky R. Commission*, 278 U. S. 300, 73 L. ed. 390, P. U. R. 1929 A 433, 49 Sup. Ct. Rep. 150; *Michigan Bell Telephone Co. v. Odell*, 45 F. (2d) 180, P. U. R. 1931 B 192, 194. (*Ibid.*, p. 222.)

[8] *Re Public Service Company of Indiana*, P. U. R. 1932 B 186.

Residential Service	$217,896
Commercial Service	103,925
Power Service	105,944
Total Decrease	$427,765[9]

Although the result of this order was to effect rate uniformity throughout the "South System" of the utility, no defense was offered for the Commission's about-face, other than the existence of an emergency and the fact that this order would afford necessary relief to the consumers in the area. Care was taken, however, to point out that the question of a reasonable rate-making unit "has been before this Commission in the so-called 'Bloomington Case' now pending . . . and that question has been passed upon by this Commission as affirming the theory that the individual cities and towns or communities are the units for rate-making purposes and the question here involved is not in fact a question or theory in any manner inconsistent with the former rulings of this Commission or in any way affecting the rights of cities or towns or any ten consumers to petition this Commission for an adjustment of rates pursuant to the provisions and rights conferred upon consumers under the Shively-Spencer Act, and such interpretation will be placed upon this question by this commission."[10]

The Commission further stated that, regardless of the result of the present order, it would adhere to its previous orders and findings relative to the so-called "South System" and would continue its preparations for a decision in the Bloomington case and other similar cases, such work to be "uninterrupted and unaffected by this order."[11] The right of every community, affected by the order, to petition for an additional adjustment, based on the reasoning of the Commission in its previous orders, was also expressly reserved.

While the two orders just discussed, involving the "South System" of Public Service Company of Indiana, were being worked out, the Martinsville case was also progressing. Shortly after the Commission's order in January, 1929, the Wabash Valley Electric Company obtained a temporary injunction from the United States District Court restraining the Commission from putting in effect in Martinsville the rate schedule it had constructed based upon a local cost allocation. On February 15, 1932, however, one month after the Commission finally granted permission to Public Service Company of Indiana to place in effect uniform rates for its "South System," the same district court upheld the Martinsville decision, dissolved the temporary injunction it had previously granted the Company, and ordered returned the "excessive rates collected since the issuance of such injunction."[12]

[9] The additional $57,400 reduction above that of the Company was justified by the emergency clause of the Shively-Spencer Act.

[10] *Re Public Service Company of Indiana*, P. U. R. 1932 B 189.

[11] The Commission also had on hand at that time a petition from the City of New Albany, Indiana, protesting against the establishment of electric rates in that city on a territorial basis. The Commission felt justified in ignoring this petition and applying its proposed uniform rate, since the latter was an emergency measure and, in effect, was a considerable reduction from the rates being applied to the city at that time. The uniform rate as applied to New Albany effected a reduction of 15 cents as to users of 15 kilowatt hours per month; 60 cents as to users of 30 kilowatt hours per month; $1.50 as to users of 45 kilowatt hours per month; $3.20 as to users of 100 kilowatt hours per month; $4.70 as to users of 150 kilowatt hours per month; and $5.95 as to users of 200 kilowatt hours per month (*Re Public Service Company of Indiana*, P. U. R. 1932 B 189). Although there is no evidence to indicate that the residents of New Albany have changed their opinion in the matter, it is entirely conceivable that they are, as a result of the instant case, somewhat less thoroughly convinced of the necessity of a strictly local cost determination based on the method employed in the Martinsville decision.

[12] United States District Court, Southern District of Indiana, Indianapolis Division. *Wabash Valley Electric Company v. Frank T. Singleton et al.*, P. U. R. 1932 B 225.

This decision sustained all the major points of the Commission's order. It too interpreted the Shively-Spencer Act as intending that the municipality should be the rate-making unit. In support of this interpretation, it pointed out that a very similar situation has arisen in the State of Wisconsin, which was decided in the same manner. Said the Court:

"The Public Utility Act of Indiana has never been construed in this particular by the Indiana Supreme Court. It is known, however, that such act is patterned generally after the Public Utility Act of Wisconsin, and many of its provisions are identical. The supreme court of that state, in a well-reasoned opinion, held that the Railroad Commission of Wisconsin, which is similar to the Public Service Commission of Indiana, is 'required to treat the municipality as a unit and to base its rate upon the cost to the utility of serving the individual municipality, rather than the average cost of serving many distinct and scattered municipalities.' *Eau Claire v. Railroad Commission*, 178 Wis. 207, P. U. R. 1922 D 666, 667, 189 N. W. 476."[13]

Of almost equal importance was the Court's finding that the Commission had adopted a reasonable method of allocating to the City of Martinsville its share of the appraised value of the "power system," which was allocated to Martinsville in the relation its total annual kilowatt-hour consumption for 1929 bore to the total sales of the power system for that year.

It is worthy of emphasis at this point that no consideration was given, nor was any mention made, by the Court of the simultaneous maximum demand put on the system by the City of Martinsville or of the total demand connected to the system through the Martinsville substation.

Less than two months after the above opinion was handed down by the circuit court, sustaining the Commission in its interpretation of the Shively-Spencer Act, the Commission followed the opposite policy in a decision involving the rates of Indianapolis Power & Light Company in Indianapolis and the surrounding rural and suburban territory.[14] The case is of little importance here, however, since the question of confining a rate analysis to the boundaries of the community involved did not enter; the case is mentioned because a uniform rate was substituted for the 28 different rates hitherto in effect throughout the rural and suburban territory. This, of course, involved overlooking the possible cost differences justifying past price differentials, which is the essence of the territorial rate theory and the uniform rate area. The opinion was written by Commissioner Cuthbertson, who indicated his preference for such a policy in his dissenting opinion in the Bloomington case discussed above.

In July, 1932, a district court handed down a decision under the title of *Indiana General Service Company* v. *John W. McCardle, et al.*, which again defined the city as the unit under Indiana law for rate-making purposes.[15] The circumstances of this case were as follows: The utility supplies electric service to 21 cities and towns in 11 counties in northeastern Indiana by means of an interconnected power system. The Company evidently felt that its rates for electricity should reflect the unified character of this system, for in April,

[13] *Ibid.*, p. 230-231. Both the instant decision and the Eau Claire decision state that unless the legislature expressly gives the Commission power to include more than one community in the rate-making unit, rates must be based upon the costs of serving the individual community. The status of the rate-making area in Wisconsin will be referred to later in this article.

[14] *City of Indianapolis et al. v. Indianapolis Power & Light Company; James H. Foster et al. v. Indianapolis Power & Light Company; Charles Deatrich et al. v. Indianapolis Power & Light Company*, P. U. R. 1932 C 154 (April 1, 1932).

[15] P. U. R. 1932 D 378.

1931, it filed with the Commission (apparently informally) a uniform residential rate for its entire territory. This was followed up by the filing of a uniform commercial rate in September of the same year. In spite of the theory upon which such a uniform rate policy is based, the Commission accepted the new rates for filing. Possibly it was influenced in this action, in spite of its own opposite theory, by the fact that the change resulted in an annual saving to consumers of approximately $160,000. In permitting this action, however, the Commission apparently again took occasion to reserve the right for each individual community in the area to ask for a separate determination of the reasonableness of the uniform rates in the light of its own condition, for when the petition of several customers of the Company in Marion, Indiana, seeking a reduction of rates in that city, was filed in November, 1931, it was accorded favorable action. Within two months an order was issued reducing rates 20% in that city, this reduction to remain in effect until such time as the Commission should be able to make a detailed study of the costs of service in that city only, upon which to base a permanent order. The utility immediately obtained a temporary restraining order and appealed to a district court for an interlocutory injunction. The circuit court granted the relief asked for, but upheld the Commission's position that "the city is the unit for the purpose of determining the value of plaintiff's property in fixing a schedule of rates for Marion."

This concludes our survey of the more important steps recently taken relative to the legal rate-making unit in Indiana, prior to the opinion of the United States Supreme Court in *Wabash Valley Electric Co.* v. *Young*, handed down January 9, 1933. No new reasoning of major importance seems to have been employed by Mr. Justice Sutherland in the preparation of this opinion. The decision merely upholds the more important points of theory in the decision of the lower court.

Since the opinion seems to be based to a considerable extent upon the previously cited Eau Claire decision of the Wisconsin Supreme Court, the following language should be of interest:

"The Supreme Court (of Indiana) thus far has not dealt with the question; but the Supreme Court of Wisconsin, construing an act of that state essentially the same as the Indiana act, has determined that the Wisconsin Commission was 'required to treat the municipality as a unit and to base its rate upon the cost to the utility of serving the individual municipality rather than the average cost of serving many distinct and scattered municipalities.' *Eau Claire v. Wis.-Minn. Lt. & Pr. Co.*, 178 Wis. 207, 220. This result was deducted (?) by the Wisconsin court (pp. 217 et seq.) not from any express provision of the statute, but from a consideration of many correlated statutory provisions and in the light of 'the history of commercial, economic, and political development.' That court pointed out that when the Public Utility Act was enacted, each municipality was charged with the duty of furnishing public utility service and endowed with power to perform that duty; that each municipality had, and dealt with, an individual public utility; that there was no great development of power by a single utility serving numerous municipalities scattered far and wide; and, hence, that present day developments could not have been within the contemplation of the Legislature because they did not exist. The court stressed the fact that, notwithstanding the subsequent large developments of power which had come about since the passage of the utility law, there had been no modification of that law, which, in the light of conditions then existing, must have 'regarded the municipality as the entity on the one hand and the utility as the entity on the other, for the purpose of establishing just and reasonable rates and service.' Upon

these considerations and others, the court reached the conclusion above stated.

"Since the Indiana act was patterned after the Wisconsin act with a like history and attended by similar circumstances, the court below felt warranted in following the decision of the Wisconsin Court; and with that view we see no reason to disagree. Whether the method afforded by the State statute thus construed is in accordance with sound policy is a question with which we are not concerned."[16]

Although the above quotation is probably the most important point of the decision from the standpoint of Indiana's territorial rate policy, the Court's unqualified acceptance of the Commission's method of allocating to Martinsville its share of the "loop" system is of primary consequence. After reviewing the Commission's method, the Court said, "The deductions from the evidence and the calculations are of necessity more or less approximate . . . but we find nothing in the record which casts a substantial doubt upon their essential fairness."

In spite of the source of this statement, there is little doubt but that many rate engineers will question it. In the first place, in the light of the rest of the decision, it is obvious that the Supreme Court is of the opinion that each municipality in Indiana must stand on its own feet from a rate standpoint. This means, in other words, that each community must pay its own costs and no others. This was possible, of course, when the Shively-Spencer Act (and the Wisconsin Utility Act[17] upon which it was based) was enacted, because interconnected systems as we now find them were then unknown, and the property used in serving a city was largely, if not entirely, located within each city's boundaries. When interconnected systems displaced the existing local generating equipment, however, the situation became largely one of joint costs, and different principles of rate making were required.

Strictly speaking, the professed policy of the Indiana Commission seems no longer possible of attainment for this very reason. Theoretically, and assuming mathematical accuracy, it might be possible still to treat each community as a unit. But, in order to do so, the rate maker would be required to make a number of determinations, of which the following suggest themselves: (1) various sources of power supplied to the city, (2) the maximum demand of the city on each of such plants, (3) the kilowatt hours taken from each, (4) the diversity of this city's demand on each of these plants in relation to the demands of other cities taking energy from them, (5) the value of the plants, (6) the demand and energy costs of generation at each plant, (7) the total maximum demand on each plant, (8) the routes over which energy reached the city from each plant, (9) the amount of energy transmitted over each line to the city in question, (10) the amounts transmitted to other cities on these particular transmission lines, (11) the value of the lines, and (12) the operating costs of the lines. With this information, other communities would *still* have to be considered, but only those which actually made joint use of the generation and transmission equipment used and useful to the city in question. But such a determination is of course impossible, even if it were practicable, since the information is not available; neither the source of the energy nor the route taken to reach a given city can be ascertained with any degree of accuracy. Furthermore, if the source and route *could* be

[16] *Wabash Valley Electric Co. v. Ralph M. Young et al.*, 287 U. S. 488.

[17] *Laws of Wisconsin*, 1907, Chapter 499.

determined, the rate maker would discover that both factors shifted so frequently as to make the information of little practical value.

This leaves but one course open to the rate maker—*he must consider the loop system as a whole*— and in so doing he has taken into consideration the other communities on the loop, has been forced to ignore the segregated-unit theory to some extent, has taken a step toward rate uniformity, and has set his rate on a *territorial* basis. It is actually a semi-territorial basis, but it is certainly not a strict segregated-unit basis.[18]

Having accepted the necessity of treating the loop as a whole, regardless of whether the particular community utilizes every part of that loop, the rate maker must next determine the basis upon which he will set up a gateway price for energy at each community on the loop. He can do this either by employing the method adopted by the Indiana Commission in allocating to Martinsville its share of the generating and transmission system investment, or by the method adopted by the California Railroad Commission in allocating to the City of Antioch its share of the joint portion of the system of Pacific Gas and Electric Company.[19] Both of these methods of cost allocation are reasonable, but not inherently so; the reasonableness of the method depends upon the purpose for which it is chosen.

The purpose of the California Commission was to allocate to Antioch its share of the joint costs of the system on a basis which would give consideration, as far as possible, to the characteristics of the load placed on the system by that city. The method followed may best be portrayed by the following quotation from the decision:

> "Table No. XIII [omitted] shows the entire local cost of the service to the town of Antioch and to the inhabitants thereof . . . To obtain the complete cost of service it is necessary to add the cost of production and of transmission to the Antioch substation, with proper correction for the local transformer losses, the load factor and the diversity factor. Table No. XI [omitted] shows that the demand cost for simultaneous demand of all substations on the transmission system is $20.13 per kilowatt, and that the energy cost is $.0033.4 per kilowatt hour, delivered at substation. After proper correction, as already noted, and further corrections for distribution losses and diversity factors between the different classes of service, it appears that the total average cost of service in Antioch, . . . based upon the present load factors and on the assumption that business will increase 10 per cent, is 5.546 cents per kilowatt hour, delivered at consumer's meters, and 3.75 cents per kilowatt hour for street lighting under present conditions.
>
> "Having thus determined the average cost of service, we are now in a position to establish the rates for the different classes of service to the inhabitants of the town . . . "[20]

The policy of allocating such joint costs on the basis of kilowatt-hour consumption, however, can have only one purpose, or perhaps we should say only one result—namely, to treat every city involved as though its load, and consequently its cost, characteristics were like those of every other city. This, of course, may be a commendable purpose

[18] This is possibly a strong statement. The author feels, however, that whatever method of fixing a gateway price for a given community is decided upon, that price is affected to *some* extent by the other communities and their characteristics. As the remainder of this article will indicate, a method of apportionment which takes account of load and diversity factors is thought to be more exact than a straight average price based upon consumption only, but it must be remembered that even such a determination is dependent to a considerable extent upon arbitrary assumptions. Consequently, the author believes those communities, which are today a part of a modern interconnected system, have necessarily lost their rights as individuals to some extent.

[19] *Town of Antioch v. Pacific Gas & Electric Co.*, California Railroad Commission Decisions, vol. 5, p. 19.

[20] *Ibid.*, pp. 64-65.

and a commendable result, depending upon one's point of view. It should *not* be considered commendable, however, by those who frown upon a uniform rate policy, for it actually distributes perhaps 50% of the total over-all costs uniformly among the cities in the system, since, by this method, each gets its energy at its gateway at a uniform price per kilowatt hour, without regard to the characteristics of its consumption. The writer wishes to emphasize the fact that this argument is not directed at the policy itself; it is directed at the use of this policy in the application of the segregated-unit theory of territorial rate making. Briefly, the method adopted by the Indiana Commission does not appear consistent with the above theory.

The incongruity of this method of cost allocation as applied to the theory of the Indiana Commission is aptly illustrated in the following quotation from a recent decision of the Missouri Public Service Commission:

"We consider . . . that this method (that of the Indiana Commission), applied to the case before us, would result in grave inequalities between the cities . . . To illustrate this inequality we will imagine the case of two cities consuming exactly the same amount of kilowatt hours of energy—say 1,200. Town A takes its entire load between the hours of 6 and 10 in the evening, thus consuming at the rate of 300 kilowatts per hour. Town B spreads its use of energy equally over the twenty-four hours, thus consuming it at the rate of 50 kilowatts per hour. At any given time when both towns are consuming energy, say from 7 to 8 in the evening, Town A is consuming six times as much energy as Town B. Since the utility is bound to provide plant and facilities adequate for the needs of all its patrons at the peak of this demand, it is plain that Town A is requiring the company to maintain six times the amount of plant and other company property which Town B requires. If each were supplied by a separate plant, it is evident that Town A would need a plant of six times the capacity of that supplying Town B, even though Town A's plant sat idle and unused for twenty hours out of the twenty-four. And thus, if both towns are served by the same plant and if the rates are based solely upon the quantity of electricity consumed, it is clear that the patrons of Town B are paying part of the cost of providing facilities for the use of Town A. In practice, such a method of apportionment would penalize the town having a favorable load factor caused by the presence of industrial users. To prevent this inequality the apportionment of the common property to each town should be calculated by a method which includes a factor or factors in addition to the ratio of consumption."[21]

Let us look at this same question from another angle. Martinsville took approximately 2,500,000 kilowatt hours of energy from its loop system in 1929. Assume that Martinsville had built up a considerable industrial load and, as a result, had a load factor of 50%. Then imagine City A, also taking its energy from the loop, and also having a consumption of 2,500,000 kilowatt hours in 1929. We will assume, however, that the latter consumption is largely commercial and residential lighting, so that the city's load factor was figured to be 30%. Such being the case, the Martinsville load would have thrown on the system a maximum demand of 570 kilowatts at possibly the same time City A threw on a maximum demand of about 950 kilowatts. Certainly few, if any, utilities today would serve the two towns as individual consumers at a uniform flat rate per kilowatt hour; nor would the Indiana Commission say they would be justified in so doing, we may assume. It is not the present contention that the "pool" plant and operating costs should be allocated among the various communities in the system solely on the basis of either their maximum demands

[21] *Public Service Commission of Missouri v. Missouri Utilities Company et al.*, P. U. R. 1932 E 492.

or the total capacity of their respective substations. The contention is made, however, that this measure of responsibility should be given some weight in the ultimate determination of a reasonable cost apportionment, or else be eliminated by the finding that all communities in the system are so similarly situated from this particular standpoint that this factor may reasonably be disregarded.

Conclusion

The obvious effect of this recent decision by the United States Supreme Court has been to outlaw the strict uniform rate area in Indiana in the same way and with the same reasoning as it was outlawed in Wisconsin in 1922 by the Supreme Court of that State. However, the popularity of the uniform rate area concept has been spreading with remarkable rapidity during the last three or four years, so it does not necessarily follow that it has been permanently banished from Indiana any more than it was from Wisconsin. The Wisconsin Legislature amended the Public Utility Act of that State in 1929 by the addition of a clause expressly granting its Commission the power to consider more than one municipality as the rate-making unit, if, in the Commission's opinion, such consideration is "in the public interest."[22] It would not be surprising to see the Indiana Legislature take the same step within the next decade, as the generation and transmission network in the State increases in complexity or as public opinion gathers headway. It must be recognized that in spite of isolated cases, such as Martinsville in Indiana and Eau Claire in Wisconsin, there is a decided demand on the part of possibly a majority of the public for some degree of rate uniformity. In its most familiar form, this sentiment is reflected in the common practice of consumers in one community to compare the rates they pay with those in a neighboring community of approximately the same size. Obviously, such comparisons seldom take possible cost differences into account, but the demand for uniformity is nevertheless potent because of this fact, and an otherwise perfect theory must sometimes be amended for the practical considerations of public policy. Perhaps the recent spread of rate uniformity may be accounted for to some extent by the complexities of present-day utility systems which provide a means by which a regulatory commission may efficiently dispose of a complicated cost problem and, at the same time, concede a point to public opinion, for the very complexity of the systems in many cases precludes anything but the establishment of some type of uniform rate area.

[22] *Wisconsin Statutes*, 1929, Section 196.03.

Population and Subdividing Activity in the Region of Chicago: 1871-1930

By HELEN C. MONCHOW

THE popular assumption is that the number of building lots provided in a given urban area increases in the same proportion as the population increases. That both urban lots and population do increase in any growing community is obviously true; that they increase in any direct relation one to the other is certainly open to question. The assumption behind such an alleged relationship is that population is a controlling force in determining the number of lots provided.

What, then, is the relation of recorded lots to population? This question has two distinct phases. One is concerned with what that relation ought to be and the other with what that relation is or has been. The problem of what the relation should be belongs to the planning or control of subdividing activity with reference to the need for urban lots. The second is an historical question, but one which must be answered before the planning or control problem can be tackled. The historical analysis seeks to discover whether population has shown any consistent or measurable relation to the number of recorded urban lots. The answer constitutes an evaluation of population as a controlling force in subdividing activity, and this is the problem to which the following discussion relates.

The data on population and subdividing activity for the region about Chicago afford valuable material bearing upon the relationships between population and subdividing activity in an area affected by a variety of strong influences.[1] The territory included in this study embraces 15 counties[2] (extending into three states) within a 50-mile radius of Chicago's loop. This is the area which has been defined by the Chicago Regional Planning Association as being tributary to Chicago—tributary in the sense of being within commuting range of the central city. While this area may for certain purposes be legitimately considered an economic unit, at least in so far as it is subject to the dominating influence of an aggressive central city, nevertheless it is quite clear that that influence will not operate with equal force in all parts of the region and that local forces will play an important role in the several portions of the larger area. Consequently, the method employed here will include not only an analysis of the behavior of population and subdividing activity over the entire area and in Chicago proper but also of their behavior in the several sub-

[1] Resulting in some rather unique developments, such as the founding and growth of the City of Gary to a population of over 100,000 within 25 years.

Another influence which has had a rather unique effect on Chicago and its environs is transportation. The region about Chicago has felt not only the centripetal force of transportation which has fed the concentration of industry and population in this area but also its centrifugal force in spreading urban development over a relatively wide territory. The development of commutation service on the railroads at just the time when Chicago was in one of its periods of most rapid expansion has been pointed to as having had peculiar significance for the physical development of the Chicago region. Certainly in contrast to many older eastern cities Chicago is a product of the railroad age and transportation development has perhaps had a peculiarly strong influence upon activites in land in the vicinity of Chicago.

[2] In *Illinois:* Cook, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry, and Will; in *Indiana:* Lake, LaPorte, and Porter; in *Wisconsin:* Kenosha, Racine, and Walworth.

centers which are influenced in varying degrees by the central city. In short, after a brief consideration of the total picture the area will be broken down into its component parts which will then be classified and analyzed separately and in their relation to the central force. This approach recognizes both the local and the central influences which play upon a given economic activity as it is carried on in the vicinity of a large and dominating central city.

The Materials of the Study

The Data. The primary data for this analysis are the lot and population series for the area. The population series are the census data, and as such require no special explanation. But their relation to the local areas to which they are attributable presented some problems when it was desired to draw the picture for a given community. In selecting and defining these local areas, an effort was made to secure areas which constituted, as nearly as possible, economic units.[3] This problem was particularly acute in the territory closest to the City of Chicago. The lot data were collected and consequently have to be dealt with in terms of townships and counties, for these are the units in which they are filed, despite the fact that these areas are more likely to be political than economic units. But examination showed that, in general, the townships may be utilized either singly or in groups of two or three to trace out fairly accurate economic boundaries. Therefore, in order to study the behavior of recorded lots and population in and about a given sub-center, the urban population attributable to that center has been related to the lot figure of the township or townships embracing that urban population.[4] Thus, in the case of Aurora, for example, the urban population of Aurora, North Aurora, and Montgomery have been totaled and correlated with the recorded lots of Aurora Township.[5] (See Table I.)

Subdividing activity is expressed in terms of the number of lots placed on record annually in the offices of the various county recorders throughout the region.[6] At the outset, certain limitations of these data should be mentioned. In the first place, it is important to note that the count thus secured is a count only of the number of lots *recorded*, not of the number of lots *sold*, although a

[3] This problem of defining urban units has long vexed students of city problems, who have usually solved it by the method best suited to the purposes they had in hand. Thus, Milo R. Maltbie in his discussion of "Municipal Functions" (2 *Municipal Affairs* 587–787 (1898) sticks to the political area, the municipality, because he is concerned with the "supplying of local needs," not with urban conditions generally. This method is adopted to avoid conflicts with specially constituted authorities created to perform specific functions, such as park or sanitary administration. He goes on to explain: "These authorities would not have been established if urban centers [a considerable aggregation of people living in a relatively small area] had not existed. The duties performed arise largely from the concentration of population, but their efficient administration is not of interest to the locality merely, but to the state as well." (p. 617).

J. E. Hooker, on the other hand, who is concerned with city planning problems ("City Planning and Political Areas," 6 *National Municipal Review* 337–45 (May, 1917)) would emphasize the economic rather than the political area: "Political areas should then be adjusted in extent to the extent of the problems with which they are to deal, . . . the aim should, at least ordinarily, be to adjust the area in size to the resultant of the demands, in respect to size, of the group of problems local to that general area . . . " (p. 340).

[4] In other words, the second of the two alternatives for measuring city growth mentioned by Weber in his *Growth of Cities* (Columbia University: Studies in History, Economics, and Public Law, 1899) is used—namely, the area to be studied is selected and then population is related to it, instead of population being taken as the basic element. (p. 19.)

[5] The assumption underlying this method, of course, is that the urban lots in a township are platted for the urban, rather than the rural, population of that area.

[6] Except for Cook County, Illinois, for which the data were secured from the plats as filed in the County Map Department, a part of the County Clerk's office.

reasonable assumption[7] is that they have been quite promptly thrown on the market, for recordation has made them taxable on a front-foot basis. Second, the count of lots does not include those which have been subdivided by metes and bounds description, for in such cases no plat is required to be filed and the land still stands as acreage. Nor does it include lots larger than three acres in size. These were arbitrarily eliminated at the time the data were collected, and the rule thus removes the so-called "county clerk subdivision" lots which may be 10-acre fields and which are units arbitrarily established for assessment purposes.[8] Third, the adjustments for areas which have been resubdivided require some explanation. In order to vacate a plat it is necessary to file that plat. Such vacations usually take place some years after the original subdivision, consequently the vacated plat has been entered upon the record at the date of its vacation and the number of lots involved therein subtracted from the total number of additions for that year. While this method gives an accurate picture of subdividing in the year that it actually takes place, it tends to overstate the recession in the year of withdrawal. Since the movement of subdividing activity is the concern here, this method is more accurate than subtraction of vacations from the total for the year of their original recordation. Fourth, the count could not supply information as to the size of the lots nor the uses to which they have been put.

The Period. The period of this study has been limited to the 60 years from 1871 through 1930. Two major factors prompted this limitation of the period to be studied: the Chicago fire of 1871 and the rise of the "modern city". The first of the factors, the Chicago fire, has exercised a double influence toward such limitation: (1) it marks the actual beginning of the primary series in Cook County,[9] which is the scene of the major portion (60.9%) of the subdividing activity in the region; and (2) it marks a new era in Chicago history, for the revised building regulations operative after 1871 within the fire limits seem to have had a marked effect on the suburban movement and the spread of the city limits.

The second major factor prompting a limitation of the period is the very plausible case which can be made for dating the beginning of the "modern city" from 1880 or thereabouts. At approximately that date a variety of factors, economic and technological, began to exert their influence upon the character of the modern city.[10] Prior to that date urban conditions had been so different as to render inadvisable a comparison of various measures of urban growth with similar measures taken subsequent to 1880. In the interest of homogeneity, therefore, any comparative study of urban conditions should be confined to the period after the decade of the seventies. In the case of

[7] This assumption is similar to the one which supposes that construction will follow soon after the issuance of a building permit.

[8] Ill. P. L. 1871, sec. 62 (27th General Assembly).

[9] Because of the destruction of the early records of the County in the Chicago fire of 1871.

[10] These influences may be grouped into three classes: (1) specialization of urban functions, illustrated by large-scale production, improved storage and transportation facilities, changed methods of inter-city marketing of surplus products; (2) technological transformation and expansion of public utility services, especially mass transportation, electric light and power, gas, water purification, street construction; (3) specialization of land uses, illustrated by skyscrapers, subdivision of residential suburbs, parks and recreational areas, and recognition of this specialization in zoning. (See Monchow, Helen C., "Finding a Base-Year for the Study of Urban Problems," 5 *Journal of Land & Public Utility Economics* 311-321 (August, 1929).)

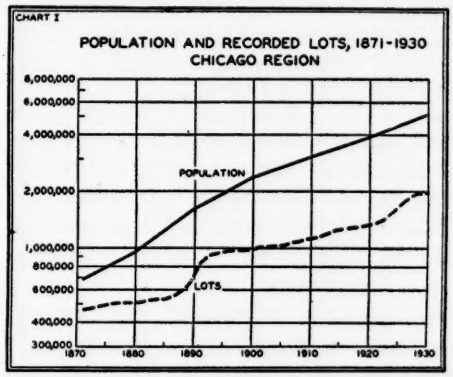
Chicago, however, it appears advisable to stretch the period slightly and start with 1871 which represents, in a degree, that is greater than usual for such arbitrary choices, a new era in the history of the City.

Behavior of Recorded Lots and Population

Following the method described above, the behavior of recorded lots and population has been charted for the total area and for the several urban centers in the region. Since one of the major purposes here is to discover whether there is a clearcut, causal relation between recorded lots and population, the two series have been kept separate in the subsequent analysis in order to watch the behavior of one with respect to the other. It has been necessary, therefore, at the outset to discard such composites as "lots per 100 population"[11] and other similar ratios. These are not useful tools for the present problem for two reasons. In the first place, they may conceal possible opposite movements of the two series; i. e., population may actually be declining at the same time that recorded lots are increasing.[12] In the second place, the use of a ratio presupposes the relationship in question; it attempts to measure the relationship before determining definitely whether any such relationship exists.

Therefore, the number of annual lot recordations and the decennial increments in population have been cumulated and plotted separately on a logarithmic scale. The resulting curves reveal a variety of relationships which can best be analyzed by classifying the areas according to their general character or relation to the central city.

In the Region. First of all, consider the picture for the entire region (Chart I). Here the two curves follow a fairly parallel direction with the lot curve tending to gain upon population. Both curves are in the nature of averages;



they conceal the extremes of rapid expansion, on the one hand, and of relative stagnation, on the other. Thus, the population curve includes communities of phenomenal growth such as Hammond, Gary, and Harvey and also those like La Porte and Zion which have increased but slightly during this period. The lot figure likewise is inclusive, embracing the boom activities of the Lake Calumet and Niles Center sections, for example, as well as the much slower expansion in such communities as Kankakee and Valparaiso. Thus, the parallelism which this picture implies is misleading, for the area involved is so large that contradictory influences have

[11] An example of this method is Ernest M. Fisher's *Real Estate Subdividing and Population Growth in Nine Urban Areas* (Ann Arbor: University of Michigan, Bureau of Business Research, 1928).

[12] In Kendall County, Illinois, between 1860 and 1870, 633 lots were recorded but the population was diminishing by 675 persons. Again, in the decade from 1880 to 1890 recorded lots increased from 1,153 to 1,477 at the same time that population shrank from 13,083 to 12,106. In fact, population continued to decline steadily from 1880 to 1920, while recorded lots were steadily increasing in number, not rapidly to be sure, but nevertheless in direct opposition to the movement of population. Such phenomena as these, which are of the utmost importance in analyzing the relation between lots and population, are thus obscured by the use of ratios.

a tendency to offset each other.[13]

Common observation shows that in one part of the region subdividing activity may be booming as a result of some specific transportation development or projected manufacturing enterprise, while in another section such activity may at the same time be stagnant as a result of almost complete appropriation of the land for urban use or the shifting of urban development in another direction. Phenomena of such opposite effects, taking place in greater and smaller degree and at various times and places throughout the period and the area, will tend to balance each other and thus to increase the parallelism between the two series when considered in the aggregate. Hence, relatively little significance can be attached to this apparent parallelism and further support is lent to the proposal to examine the component parts of the area for a more realistic picture of the relation between lots and population.

In Independent Cities. The several urban communities within the region lend themselves to classification according to their independence of, or their relatedness to, the central city.[14] Seventeen areas were designated as belonging to the first class and 19 to the second.

[13] Similar impressions of parallel development are to be found in other urban areas. If Professor Fisher's lot and population data are plotted separately on logarithmic scale, the results are pairs of curves with considerable parallelism between them. But since he also defined his areas as nearly as possible in terms of metropolitan districts, the results are subject to the same objections as those indicated for the Chicago regional picture.

[14] The distinction between the so-called independent and the suburban or satellite cities is based upon the percentages of the population in each community that live and work within the urban area compared with those that live in these centers while working elsewhere. This method has been devised by the Chicago Regional Planning Association and used by them and others (notably, Fink, Orman S. and Woodbury, Coleman, "Area Requirements of Cities in the Region of Chicago," 4 *Journal of Land & Public Utility Economics* 273–282 (1928).)

TABLE I. DEFINITION OF URBAN CENTERS, INDEPENDENT AND SUBURBAN,* INCLUDED IN THIS STUDY.

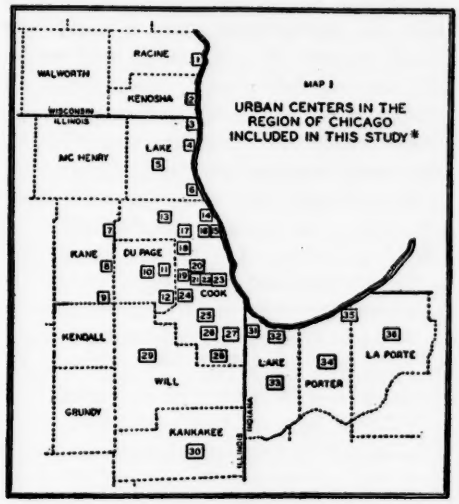
Urban Centers	Population	Recorded Lots
Wisconsin		
Racine County		
1. Racine (I)	Racine	Mt. Pleasant Tp.
Kenosha County		
2. Kenosha (I)	Kenosha	Pleasant Prairie and Somers Tps.
Illinois		
Lake County		
3. Zion (S)	Winthrop Harbor Zion	Benton Tp.
4. Waukegan (I)	N. Chicago (part), Waukegan	Waukegan Tp.
5. Libertyville (S)	Libertyville, Mundelein	Libertyville and Fremont Tps.
6. Highland Pk. (S)	Bannockburn, Deerfield, Highland Pk., Highwood, Lake Bluff, Lake Forest, N. Chicago (part)	Deerfield (incl. W. Deerfield) and Shields Tps.
Kane County		
7. Elgin (I)	Elgin, S. Elgin	Elgin Tp.
8. Batavia, etc. (I)	Batavia, Geneva, St. Charles	Batavia, Geneva, and St. Charles Tps.
9. Aurora (I)	Aurora, Montgomery, N. Aurora	Aurora Tp.
Du Page County		
10. Wheaton, Glen Ellyn (S)	Glen Ellyn, Wheaton	Milton Tp.
11. Elmhurst (S)	Elmhurst, Lombard, Villa Park	York Tp.
12. Downer's Gr. (S)	Clarendon Hills, Downer's Gr., Hinsdale, Westmont	Downer's Grove Tp.
Cook County		
13. Arlington Hts. (S)	Arlington Hts., Mt. Prospect, Wheeling	Wheeling Tp.
14. Wilmette, Winnetka (S)	Glencoe, Glenview (part), Gross Pt., Evanston (part), Kenilworth, Northfield, Wilmette, Winnetka	New Trier Tp.
15. Evanston (S)	Evanston	Evanston Tp.
16. Niles Center (S)	Evanston (part), Glenview (part), Golf, Morton Gr., Niles, Niles Center, Tessville	Niles Tp.
17. Des Plaines, Park Ridge (S)	Des Plaines, Edison Pk., Glenview, Niles (part), Park Ridge, Riverview	Maine Tp.
18. Elmwood Park (S)	Elmwood Park, Franklin Park, River Gr., Schiller Park	Leyden Tp.
19. Maywood (S)	Bellwood, Berkeley, Broadview, Brookfield (part), Forest Pk., Hillside, La Grange Pk., Lyons, Maywood, Melrose Pk., N. Riverside, River Forest, Riverside, Westchester, Western Spgs. (part)	Proviso, River Forest, and Riverside Tps.

TABLE I. DEFINITION OF URBAN CENTERS, INDEPENDENT AND SUBURBAN,* INCLUDED IN THIS STUDY. (*Cont'd.*)

Urban Centers	Population	Recorded Lots
20. Oak Park (S)	Oak Park	Oak Park Tp.
21. Berwyn (S)	Berwyn	Berwyn Tp.
22. Cicero (S)	Cicero	Cicero Tp.
23. Chicago (I)	Chicago	(See text, pp. 197–8.
24. LaGrange (S)	Brookfield (part), Hinsdale (part), Hogdkins, Justice, LaGrange, Lyons, McCook, Riverside (part), Spring Forest, Summit, Western Springs (part)	
25. Blue Island (S)	Alsip, Blue Island (part), Chicago Ridge, Evergreen Pk., Oak Lawn, Worth	Worth Tp.
26. Midlothian (S)	Blue Island (part), Hazelcrest (part), Homewood (part), Markham, Midlothian, Posen (part), Robins, Tinley Pk.	Bremen Tp.
27. Harvey (I)	Blue Island (part), Burnham, Calumet City, Dixmoore, Dolton, E. Hazelcrest, Harvey, Hazelcrest (part), Homewood (part), Lansing (part), Markham (part), Phoenix, Posen (part), Riverdale (part), S. Holland, Thornton	Thornton Tp.
28. Chicago Hts. (I)	Chicago Hts., Flossmoor, Glenwood, Homewood (part), Lansing (part), Matteson, Olympia Fields, Richton Pk., S. Chicago Hts., Steger	Bloom and Rich Tps.
Will County 29. Joliet (I)	Joliet, Rockdale	Joliet Tp.
Kankakee County 30. Kankakee (I)	Bourbonnais, Bradley, Kankakee	Bourbonnais and Kankakee Tps.
Indiana Lake County 31. Hammond (I)	E. Chicago, Hammond, Highland, Munster, Whiting	North Tp.
32. Gary (I)	Gary, Griffith	Calumet Tp.
33. Crown Pt. (I)	Crown Point	Center Tp.
Porter County 34. Valparaiso (I)	Valparaiso	Center Tp.
La Porte County 35. Michigan City (I)	Michigan City	Cool Spring and Michigan Tps. and Pine Tp. (Porter Co.)
36. LaPorte (I)	La Porte	Center Tp.

*"I" indicates "independent" and "S" indicates "suburban" cities as defined in n. 14, p. 196.

These urban centers, as they are defined for the purposes of this study, are listed in Table I and their geographic locations are indicated on Map I.

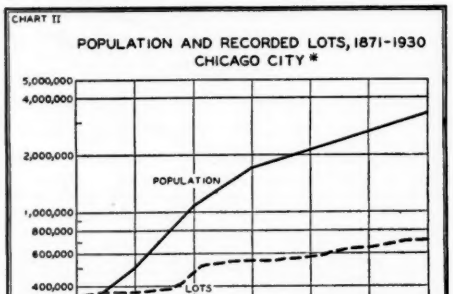


*See Table I for names of the urban areas.

Although technically belonging to the group of independent cities, Chicago deserves separate consideration, for aside from its "independence" it has few similarities, either in characteristics or in the behavior of its lot and population curves, with the other members of the independent group. Before discussing the performance of the curves, a word should be said about their construction (Chart II). As already indicated, the policy in this study has been to select as nearly as possible an economic area and then to relate the population element to that area and this method was particularly useful in the case of Chicago with its numerous annexations. The area was kept constant throughout the period at its present limits and the population as recorded in the census figures for the city was augmented by the urban populations reported as living in this

area but outside the city limits until those limits had expanded to their present proportions.

Examination of Chart II shows first of all the rather surprising flatness of the lot curve, indicating a relatively small amount of subdividing within the city during this period. Over one half (51%) of the subdividing that has been done inside the city was done before this study begins and only about 28% of it has been done since the great orgy of 1890-1. Even the most recent subdividing boom of 1925-6 had no appreciable foothold in Chicago itself.



*See text, p. 197, for discussion of the construction of these curves.

The other striking feature of these curves is their increasing divergence which probably may be accounted for on the one hand, (1) by the multi-family influence[15] with its consequent lessening of the amount of land brought onto the market for urban use; and, on the other hand, (2) by the almost complete absorption or appropriation of land in the city into urban use.[16] The disappearance of the possibilities for expansion in Chicago may be more or less conclusively shown by the following rough calculation based on data supplied by the Chicago Regional Planning Association.

[15] The multi-family dwelling has been an important factor in Chicago housing since the reverses of 1873.

Total Area of Chicago (1932)	134,400 acres	100.00%
Street area	30,000 "	
Parks, playgrounds, cemeteries	8,150 "	
Lakes (Calumet and Wolf)	2,300 "	
Railroad yards and rights of way	9,500 "	
Unsubdivided manufacturing area	2,900 "	
	52,850 acres	39.35%
Lots recorded	61,843 acres*	46.05
	114,693 acres	85.40%
Unsubdivided area	19,707 acres	14.60%

* 711,200 lots at an average size of 30x125 feet.

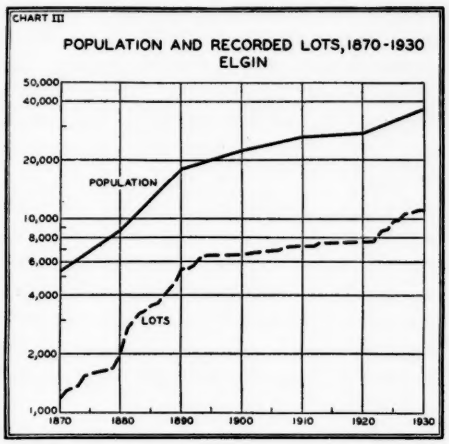
Of these 19,707 acres unaccounted for, only approximately 10,000 acres (7.44% of the total city area) are known to be unsubdivided. The remaining 7% of the area is doubtless occupied by water surface (including the Chicago River, etc.) and other odds and ends probably not usable for urban purposes. In short, it is clear that subdividers must turn elsewhere, and in fact have been turning elsewhere, than to Chicago as the scene for their activity.

But Chicago is not typical of independent cities generally, whose movements of lots and population must be discovered through other samples. Since it is not feasible to examine here all the independent cities included in this study, Elgin[17] has been selected to illustrate the nature of the relation between recorded lots and population in indepen-

[16] Or as completely as land is ever used in American cities.

[17] The selection as between Elgin and Aurora was more or less arbitrary. Both show the characteristics of the group and both show them more clearly than the group of three cities which lie between them—namely, Batavia, Geneva, and St. Charles—each of which is doubtless less "independent" than either of the cities to the north or to the south of them. An interesting sidelight, however, is provided by a composite graph which combines all five of these cities to give the picture for the Fox River Valley. In so far as the combination tends to round out an economic, independent unit, the resulting curves approach more nearly the type for independent cities than do the individual curves for any one of the units.

dent cities (Chart III). Here we find a relatively large amount of parallelism between the two curves, with population always in the ascendancy. The population curve slopes upward fairly steadily, with a tendency in the majority of instances to show an additional spurt in



the last decade. The lot curve, on the other hand, is much more irregular in its behavior, and this is not entirely attributable to the fact that it is constructed from annual rather than decennial figures. Even the use of decennial figures would not remove the bulges which reflect the excitement of the years 1890-1 or the definitely upward turn which the most recent boom (1925-6) has given to nearly every lot curve. But for the most part practically the entire group is characterized by the same rough parallelism between the two curves as is shown for Elgin.

A few of the outstanding exceptions, however, deserve special mention. These include Waukegan, Michigan City, Hammond, Gary, Harvey, and Chicago Heights.

In the case of Waukegan there was an early period of very active subdividing and speculative activity, connected mainly with the coming to that city of several large manufacturing establishments[18] and the completion of the Elgin, Joliet and Eastern belt railroad to that point in 1889. North Chicago also enjoyed the limelight as a potential manufacturing center of the future, whose advantages were supposed to be further enhanced by changing its name from South Waukegan to North Chicago. These large occasional activities have caused the lot curve to be irregular and at one point (after the subdividing orgy of 1890-1) even to extend above the population curve for a few years.

Michigan City represents another major exception to the general parallelism. Here the lot curve rose at a much more rapid rate than the population line, threatening to overtake it if the trend of the 1920-30 decade continues. The cause of this divergence from pattern may be found largely in the great spurt in resort developments in the vicinity which carries the lot curve up, while the population curve does not benefit from additions by users of these lots who are counted in other communities than Michigan City.

Hammond and Gary present radical departures from the usual pattern for independent cities. In fact, these curves resemble those of certain satellite or suburban cities, in which subdivided lots took the lead in the early years, and have remained in excess of population all, or nearly all, the time since. The whole area at the foot of Lake Michigan had been the scene of vast and repeated speculative developments; rumors of

[18] The Washburn-Moen Co. moved their plant to Waukegan in 1890 and at once large additions were platted to take care of the population expected in connection with this development. This is exactly in line with the statement of the New York Regional Plan Vol. II, p. 34): "If a factory goes into a comparatively open district, it may occupy little land but cause ten or twenty times the area it covers to become ripe for building development, and thus sterilized for other uses."

the coming of great enterprise to the area called forth successive schemes for urban development which have been aptly referred to as "Dream Cities of the Calumet".[19] Several such promotions took place before the period under consideration here, and others are reflected in the upward swing of the lot curve in advance of population before the most recent and more substantial developments at Gary and Hammond and the other cities in their immediate vicinity. Of the two, Hammond and its neighboring cities, Whiting and East Chicago, have shown the more substantial growth, for actual manufacturing and transportation developments were taking place in that vicinity during most of the period although, to be sure, they were always overcapitalized by the ever optimistic subdividers.

The pictures for Harvey and Chicago Heights, as reflected in the curves for Thornton and Bloom-Rich Townships, present still another drastic variation. Thornton and Bloom-Rich Townships[20] have been the scene of vast land manipulations as various manufacturing projects were rumored and as it was crossed and recrossed by one railroad after another entering the Chicago area. The result has been the almost constant excess of lots over population, although in recent years the population curve has tended to approach the lot line.

In order further to substantiate these conclusions by other than visual or graphical means, the data were subjected to another test. The average annual rates of increase for both lots and population were calculated for the entire period[21] and the results tabulated for the independent cities in Table II and for the suburban class in Table III. If lot recordations took place in direct proportion to population increases, the cities would be grouped along a line running diagonally through this table from the upper left to the lower right corner.

A glance is sufficient to show that only seven of the 19 instances show even approximately this relation between recorded lots and population. Even in these seven instances, of course, the correlation is not exact because the class intervals allow for a slight spread between lots and population.[22]

Considerable space might be devoted to discussing the reasons for the variation in each instance, but that is scarcely necessary for the purpose in hand. Two of the cities included here, however, do require a brief explanation. Some surprise may be occasioned by the appearance of Gary and Harvey in the category of cities whose population has increased more rapidly than recorded lots, particularly in view of previous reference to the speculative maneuvers in land in this vicinity in connection with extensive manufacturing and transportation developments. In both cases, however, again asserting its influence in the 1925–6 boom when extension of the suburban service of the Illinois Central Railroad brought both population and subdivision growth to the area.

[19] So described by John O. Bowers in *History of Lake County* (Ind.), Publications of Lake County Historical Assn., vol. 10 (Gary, 1929). A spectacular instance was the projected removal in 1891 of the Chicago stockyards to Tolleston, Indiana, now embraced within the city limits of Gary.

[20] The graph for Bloom Township is materially altered by its combination with Rich Township but expediency dictated this union. In the early years, i. e., between 1870 and 1890, Rich Township dominates the picture with its almost static condition but from 1890 on the great land activity and population growth in Bloom Township become the controlling elements, with Rich,

[21] In some cases the data did not go back the full 60 years, but in such instances as long a period as possible was secured and, of course, lots and population for a given city always represent the same number of years.

[22] Thus, though Aurora, e. g., appears to show a direct relation between lots and population, actually its lots were increasing at a more rapid rate (2.98%) than its population (2.45%).

TABLE II. CORRELATION BETWEEN ANNUAL PERCENTAGE INCREASES OF POPULATION AND RECORDED LOTS

Independent Cities

Percentage Increases in Population*	Percentage Increases in Recorded Lots†						
	1–2.99%	3–4.99%	5–6.99%	7–8.99%	9–10.99%	11–12.99%	13–14.99%
1–2.99%	Aurora Kankakee La Porte Valparaiso	Crown Point	Batavia				
3–4.99%	Chicago Racine	Elgin Joliet	Kenosha MichiganCity				Waukegan
5–6.99%							
7–8.99%		Harvey		Chicago Hts.			
9–10.99%		Gary		Hammond			
11–12.99%							
13–14.99%							

*Annual rates of increase were calculated by use of the formula: $P_x = P_o (1+r)^n$, in which P_x = population in 1930; P_o = population at the beginning of the period (in the majority of cases this was 1870); r = rate of growth; and n = number of years from the first population date to 1930 (usually 60 years). (See Chaddock, R. E., *Principles and Methods of Statistics* (Boston: Houghton Mifflin Co., 1925), pp. 125–7.)

†The same method was applied to recorded lots.

however, the lot data go back farther than population data (for instance, Gary was founded in 1906), and consequently this earlier subdividing activity had made many lots available before population began to grow.

But even making allowance for these irregularities in the percentages, the evidence is perfectly clear that in independent cities no clear-cut and consistent relation between recorded lots and population, which would supply a working basis for further analysis, can be discovered. Also, the relative irregularity of the lot line indicates that other factors than population must be operative to affect subdividing activity in these areas.

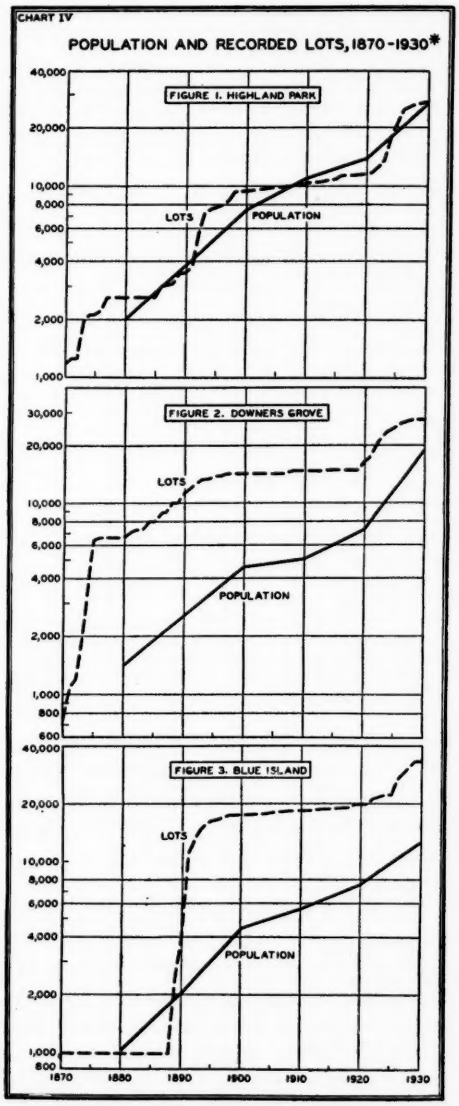
In Suburban Cities. In this second group of cities it is difficult to find examples which may be considered even fairly typical, so very different are the patterns one from another. But three areas may be selected for illustration: Highland Park and its principal neighbors, Lake Forest, Lake Bluff, and North Chicago (Chart IV, Figure 1); Downer's Grove, together with Hinsdale and

Clarendon Hills (Chart IV, Figure 2); and Blue Island, the dominating center in Worth Township which represents the manufacturing area encircling Chicago on the south (Chart IV, Figure 3). For the most part, the cities, towns, and villages included in these several areas are suburban in character.[23]

The curves for the Highland Park area, while not so dissociated from each other as in some instances, surely cannot be said to furnish any evidence pointing toward a definite, causal relationship between lots and population. Next to the irregularity of the picture, its most outstanding feature is the surplus of lots over population during a majority of the years of the period. The results for Downer's Grove, in turn, are less irregular but they show an even greater oversupply of lots. Throughout the period lots have been greatly in excess of population, with population, however, showing a tendency to narrow the gap in recent years. The picture for Blue Island is typical of several communities which experienced a tremendous boom in 1890-1, after which the subdividing business was more or less at a standstill until the last spurt in 1925-6.

It is difficult to describe the curves for the entire group in any general terms, but a few major characteristics may be discerned. Frequently the lot curve shoots off far above the population line and often remains there throughout the period. It is also even more irregular for this group of cities than for the independent group, spurting forward in great jumps under the impetus, usually, of some force other than population alone. Finally, its general trend is rather more sharply upward than that of the independent cities. With reference to each other, the two curves frequently cross and recross without much evidence of relationship or waiting for one to catch up with the other before continuing its rise.

In this group of satellite cities also appear certain exceptions. Evanston and Cicero, for instance, resemble the independent group more closely than the



*See Table I for designation of these urban areas.

[23] See note 14 above.

suburban, and this is more true of Evanston than of Cicero. Different factors, however, probably account for these resemblances. Evanston, while clearly a suburb or satellite city,[24] lies to the north of Chicago, the direction in which subdivision development was slowest to travel; in other words, it grew less spectacularly and episodically than most of the other cities in the suburban group. Cicero, on the other hand, is a manufacturing center which is in some respects almost independent in character. Its subdividing activities are also probably kept in line to a certain extent, particularly in recent years, by the gradual absorption of its area into urban use.[25] This fact doubtless accounts in

[24] Evanston has recently shown certain tendencies toward the "independent" status, through its development as a trading center, but it still has a sufficiently small proportion of its population locally employed to justify its classification as a suburban city.

[25] The validity of this explanation may be supported by a rough calculation. If from 3,840 acres (the total area of Cicero) are subtracted: (1) approximately 1,200 acres which are occupied by manufacturing and railroad rights of way never subdivided, (2) 660 acres (25% of the remainder) for streets, and (3) 48.6 acres for parks and playgrounds, the result is about 1,930 acres which, at the rate of 10 lots per acre, would provide 19,300 lots. The records show that Cicero has 17,546

(*Footnote 25 continued on page 204*)

TABLE III. CORRELATION BETWEEN ANNUAL PERCENTAGE INCREASES OF POPULATION AND RECORDED LOTS*

Suburban Cities

Percentage Increases in Population	Percentage Increases in Recorded Lots						
	1–2.99%	3–4.99%	5–6.99%	7–8.99%	9–10.99%	11–12.99%	13–14.99%
1–2.99%....	Zion						
3–4.99%....	Arlington Heights				Libertyville Wheaton-Glen Ellyn		
5–6.99%....	Cicero Downer's Grove Wilmette-Winnetka	DesPlaines Evanston Highland Pk. LaGrange Maywood		Blue Island			Niles Center
7–8.99%....			Elmhurst				Oak Park (19.34% lot increase)
9–10.99%...			Elmwood Park				
11–12.99%..	Berwyn			Midlothian			
13–14.99%							

*See footnotes to Table II.

part for the increasing divergence between the population and lot lines in the last two decades.

If this group of cities is now subjected to the same type of analysis as was applied to the independent group, the net result in the two instances is the same, although the exceptions are even more numerous (Table III). According to this table, only one community (Zion) shows even an approximately parallel rate of increase between its population (1.21%) and its recorded lots (2.85%). The most surprising thing about the table, however, is the number of instances in which population has been increasing more rapidly than lots. Of course, three of these cases (Berwyn, Cicero, and Evanston) are partially explainable in terms of the approaching absorption of their areas into the urban land category.[26] The other striking feature of the table is the enormous subdividing activity in Oak Park, which has been almost completely developed in the period since 1880, in contrast with its neighbors, Cicero and Berwyn, which have had a longer and therefore slower climb to their present, almost completely developed, state.

Thus a summary of the trends revealed by this group of cities must set forth the almost complete absence of any causal relation between recorded lots and population. For the most part, with the exceptions noted, the two curves seem to move quite independently of each other and the frequent occurrence of the lot line far above the population curve suggests that other factors than population have had stronger effects on recorded lots, resulting in the frequent provision of more than one lot per person in many areas and that for several years at a stretch.

In order to round out the discussion it may be pertinent to examine briefly some of the areas which have not been treated in relation to urban centers. A fair sample of such areas may include the remaining townships of Cook County, not already analyzed. If this group of townships is listed with their 1930 urban populations and their total recorded lots as of that date (TableIV), we discover that, whereas they contain only .2% of the total urban population of the County, they embrace 1.2% of the total recorded lots in the area. Again no causal relation between lots and population appears but instead only further evidence of a superabundance of lots.

Up to this point the study has produced no support for the generalization about "more people, therefore more lots", and it has also shown that no rules for action can be derived solely from analysis of these trends.

Conclusion

After all, are these revelations really so very surprising? A further examination of the two elements in question—recorded lots and population—may throw some light on why the two could scarcely be expected to move together to any considerable degree.

Population, as already indicated, is not the simple matter of the number of people within a given area. Within a large area such as the region about Chicago, the population element should be considered in its total as well as its local aspects and then also in its psychological implications. A rapidly growing

(Footnote 25 continued from page 203)

lots on record, which means that only about 1,754 more lots (175 acres) remain available for subdividing.

Similar calculations for Oak Park and Berwyn, also based on estimates from the Chicago Regional Planning Association, yield results which are reflected in the flattening out of the lot curves in recent years in those communities as well.

[26] See note 25 above.

TABLE IV. URBAN POPULATION AND NUMBER OF LOTS ON RECORD IN COOK COUNTY, BY TOWNSHIPS, AS OF DECEMBER 31, 1931.

Townships in Cook County	Population*	Lots
Total, Cook County	3,943,386	1,176,110
Townships used with urban centers		
Berwyn	47,072	14,976
Bloom-Rich	28,543	29,621
Bremen	5,027	26,571
Chicago	3,388,535	711,200
Cicero	66,602	17,546
Evanston	63,120	15,704
Leyden	17,164	25,420
Lyons	30,747	24,993
Maine	18,759	23,178
New Trier	36,619	18,550
Niles	9,668	48,279
Oak Park	63,982	13,840
Proviso, Riverside, and River Forest	86,820	58,926
Thornton	49,581	76,851
Wheeling	5,652	10,477
Worth	12,604	34,362
Total	3,930,495	1,150,494
Percentage of total	99.8%	97.8%
Townships not used with urban centers		
Barrington	1,990	1,434
Elk Grove	1,037	3,470
Hanover	935	2,377
Lemont	2,582	1,762
Northfield	3,025	5,669
Orland	571	3,243
Palatine	2,118	4,349
Palos	633	2,238
Schaumberg	.....	1,074
Total	12,891	25,616
Percentage of total	.2%	1.2%

*1930 Census.

city gains momentum from its own size and captures the popular imagination from which it takes off for new flights. No better illustration of this phenomenon could be found than the situation which existed in Chicago in the late eighties and early nineties of the last century. At that time the tremendous developments and rumors of developments in transportation and manufacturing which centered in this vicinity fed upon themselves, until the popular mind had conceived the idea that nothing could halt the process of expansion. And the subdividers were not slow to take advantage of their opportunity: witness the wholesale throwing of urban lots on the market, not only in the vicinity of the projected industrial developments but almost universally throughout the Chicago region. Of course, this confidence overreached itself, but for the moment the impetus of a going concern was greater than the sum total of the elements which composed it. Population was one of these elements but it alone did not account for the total effect. Population was increasing and increasing rapidly but in many instances it was because of the entrance of new manufactures and the development of new transportation lines which brought more people to this area or made more people tributary to Chicago. Thus, in the last analysis, population should be credited only in part, while manufacturing, transportation, and other factors should be examined to determine their share in the total effect upon subdividing activity. Many of these elements are reflected in population growth but population growth may be regarded rather as a secondary than as a primary influence affecting subdividing activity.

Recorded lots, as already indicated, are purely a market phenomenon. The number placed on record at a given time represents the subdividers' estimates of what the market will absorb. Subdividers are concerned primarily with selling lots and only secondarily with the problems of when and how they may come into use. This statement is not intended to cast any reflections on the subdivider who takes great pains to plan and develop his subdivision for use. There are all degrees of standards maintained by subdividers, from those who sell lots which differ from raw land only by the addition of a few stakes to

those who sell sites which are ready for building and which have been carefully developed in accord with a community plan. But behind both is the ultimate purpose to sell sites and the annual recordations constitute the total estimate of "what the traffic will bear" in the way of supply and still yield a reasonably quick turnover to the seller.

To the subdivider, therefore, population represents only potential buyers and, consequently, it is not local population which concerns him but people anywhere who may be induced to purchase his lots. His purpose is to make money by meeting, or creating, the maximum demand for lots and this maximum includes sufficient lots not only to (1) accommodate potential users; (2) to supply new sites as old ones closer in become obsolete or undesirable for their present use, or are made so by the creation of new sites; and (3) to satisfy the speculative and investment demands for urban sites.[27] These are the concerns of the subdivider and clearly the actual population of a given area is not immediately pertinent to the fulfillment of his purposes. Quite as important for his interests would be the entrance of a new manufacturing enterprise into the area, the opening of a new transportation route in the vicinity,[28] or the existence of a current speculative interest which is fed either by local developments or by a general boom psychology. These, rather than population, are the signs he follows in planning his selling campaigns.

Thus, subdividing activity, in turn, must also be recognized as a secondary element in urban growth. The demand for urban lots is a "derived demand" which, like population, has its roots in industrial and commercial developments. Both population growth and subdividing activity are the products of a variety of complex influences; they are the relatively passive elements which are operated upon by the more dynamic and fundamental factors in urban growth—namely, transportation and industrial-commercial development, and, behind even these, the deep-seated urge which brings people to a community to seek an opportunity to earn a livelihood and hence a place to live.

Consequently, the next step will be to analyze certain of these underlying factors in their relation to subdividing activity and with a view to discovering, if possible, to what extent they contribute to the *need* for urban lots, rather than merely afford the ever-ready subdivider further excuses for plying his trade. Such analyses should shed additional light upon the population factor as an element in urban growth and certainly upon the movements of population in a given area, knowledge of both of which is essential in determining the land needs of a community. Thus, given some indication of the weight to be assigned to these various factors, it should be possible to devise a method for establishing and maintaining at least some degree of coordination between the building sites provided for an urban community and the number necessary to meet its reasonable needs. Such measures may have to be expressed ultimately in terms of population, but population would be treated as a kind of convenient measuring rod of the various active forces which contribute to urban growth and expansion.

[27] The latter demands may or may not be legitimate, but that point is not for consideration here.

[28] In the New York Regional Plan volumes (*Regional Survey of New York and Its Environs*), Vol. II, p. 37 reference is made to the "observed fact that transportation and industrial developments together constitute the primary forces that attract and hold population." Ultimate authority for this and similar statements is usually recognized as coming from Weber's exhaustive study, already mentioned.

Commission Regulation and Home Rule in Ohio

By BEN W. LEWIS

"THE distinguishing characteristic of the general laws which provide for commissions is that they regard the regulation of public utilities as a problem upon which continuous attention must be bestowed . . . Instead of periodic adjustments of rates by means of legislative acts or special franchises the new legislation sets up conditions which are to be continuously operative."[1]

The Ohio Public Utilities Commission (then termed Public Service Commission) was created by Act of the Ohio Legislature in 1911[2] on the crest of the wave which swept the country following the New York and Wisconsin legislation of 1907. As part of this general movement and, more particularly as modelled closely in many respects upon the form of the Wisconsin statute, the Ohio Act must have been designed to achieve something of that peculiar continuity and positiveness of control which constituted the most compelling attribute of the new system of state-wide administrative regulation.

But utility regulation was not new in Ohio in 1911. Through the years since 1869 a statutory framework had been built up which permitted any incorporated municipalitity to control by ordinance the rates to be charged by gas (1869), electric (1889), and water (1904) utilities and to negotiate binding rate contracts.[3] Further, the existing regulation was more than a chance collection of statutes; it represented a deep-seated and growing sentiment in favor of local regulation of local utilities —a sentiment which became even more crystallized in 1912 (the year following the establishment of the Commission) in the form of a "Home Rule" amendment to the State Constitution.[4]

In this situation, with the institution of State Commission control at a time when home rule enthusiasm was at its height, only a compromise between the conflicting principles could have been anticipated and this, indeed, has been the result. In fact, Commission regulation underwent a severe struggle in its early years to attain even a "compromise" status in Ohio and, even today, periodic rate determinations through a process of higgling between municipal and utility officials, with an occasional "appeal" to the Commission, are far more characteristic of the Ohio situation than is the continuous, positive adjustment of rates by an expert administrative body which, ostensibly, was ushered in by the legislation of 1911.

The distribution of regulatory jurisdiction in Ohio between the Utilities Commission and the municipalities is still frequently the subject matter of heated controversy and litigation, and

[1] M. G. Glaeser, *Outlines of Public Utility Economics* (New York: Macmillan Co., 1927), pp. 235–236.

[2] 102 O. L. 549

[3] 66 O. L. 218; 86 O. L. 62; 97 O. L. 114.

[4] Article XVIII, Section (3) provides that municipalities shall have the authority to exercise all powers of local self-government and to adopt and enforce within their limits such local police, sanitary and othes regulations as are not in conflict with general laws; and Section (4) gives authority to municipalities to acquire, construct, own, lease and operate within or without its corporate limits, any public utility the product or service of which is or is to be supplied to the municipality or its inhabitants, and to contract with others for any such product or service.

one hesitates to speak positively with reference to any phase of the jurisdictional scheme which has not been passed upon specifically by the courts. The statutory background existing in 1911, the legislation of that year and its subsequent modifications and enlargements, the constitutional amendment of 1912, and the interpretation of the whole at the hands of the Ohio Supreme Court have combined to produce a jurisdictional melange as bizarre in appearance as it is unwieldy in operation.

The situation seems to be as follows: Jurisdiction over certain utilities is exclusively in the municipalities; similar jurisdiction over other utilities rests with the Commission, while in the case of the remaining utilities original jurisdiction lies in the municipalities (if they care to exercise it) with an appeal from the municipal ordinance to the Commission. Street railways and intra-city transport utilities generally fall within the sphere of municipal control alone.[5] The jurisdiction of the Utilities Commission is original and complete in the case of steam railroads, inter-city motor and electric transport, and telegraph and telephone companies.[6] Concerning all these, with the exception of the one last named, little question has been raised, but in the case of telephones the power of the Commission was accorded precedence over that of the municipalities only after strenuous and prolonged litigation.[7] Rate proceedings involving utilities in the telephone group may be instituted upon a filing of rates by the company, upon complaint of users, and upon the Commission's own motion. This is, in short, the one situation under the Ohio statutes in which the possibility of positive, continuous regulation is definitely provided for.

[5] G. C. 9113, 9133, 9144, 3769, 3770, 3645, 3640, 3642, 614–47, 614–84.

[6] G. C. 501, 502 *et seq.*, 614–1, 614–2, 614–3, 614–20, 614–52, 614–84, 614–86.

[7] The power to regulate telephone companies under the home rule amendment was denied to municipalities in *Cleveland Telephone Co. v. City of Cleveland*, 98 O. S. 358 (1918), on the theory that the authority given in the home rule amendment was subject to the limitation set forth in the same amendment to the effect that the power must not be so exercised as to conflict with the general laws of the State. The general laws of the State had established the Commission as the regulatory agency in this situation. Something of the home rule "atmosphere" in Ohio may be gleaned from the following excerpts from the opinion of Judge Wanamaker, dissenting in this case: " . . . the state commission plan is pure, practical autocracy . . . [I indulge] the hope that the majority opinion shall not become the settled law of Ohio, but that a reconsideration upon the part of the public, as well as the bench, shall lead to a reversal of the undemocratic, un-American, unconstitutional doctrine announced in this opinion. Unless this be done, there is nothing left but the shell of home rule in Ohio. The soul and spirit of it has been by this court transferred by a process of legal legerdemain back into the hands of the general assembly, from whom the constitution-makers believed they had entirely and eternally divorced it." Judge Donahue, for the majority, had said: "This article of the constitution grants to municipalities as full and complete authority to exercise all powers as it is possible to grant them without erecting each municipality into an independent sovereignty, wholly separate and apart from the state. The people of this state refused to do this; certainly a court ought not to do so by a construction wholly at variance with and in defiance of the plain, positive and unambiguous language used in the constitution itself." (Cf. n. 4, *supra*).

The right of a municipality and a telephone company which had not obtained a certificate of convenience and necessity from the State Commission, as required by statute (G. C. 614–52), to execute a franchise contract was denied in *Local Telephone Co. v. Cranberry Mutual Telephone Co.*, 102 O. S. 524 (1921), despite the authority conferred upon the municipality by the "contract" section of the home rule amendment (n. 4, *supra*). The Company, by reason of its failure to possess a certificate, was held to be under a legal infirmity, and incapable of contracting for the furnishing of telephone service. "The contractual incapacity in no way affects or limits the municipal power, but renders a contract made with another, who is under disability, ineffectual and unenforceable. The contract falls because of the infirmity of the other party, and this section [G. C. 614–52], regulatory in nature, cannot be said to abridge the constitutional grant comprised in the Home Rule Amendment." But it is not clear that a municipality would be incapable of executing a binding rate contract with a telephone company which was under no statutory disability. There are no such contracts in effect in Ohio today, according to information furnished by the Utilities Commission.

In the matter of heating, gas, electric, and water companies, a most interesting jurisdictional set-up has been established. Municipalities possess the authority to regulate from time to time the price which may be charged for any of these services. If such price is fixed by municipal ordinance for a period not exceeding 10 years and the company assents in writing to the specified terms, the municipal council is rendered powerless to require the company to furnish service at any lower price during the life of the ordinance. If, on the other hand, the company is not willing to accept the rates set forth and so signifies by complaint to the Public Utilities Commission within 60 days after the passage of the ordinance, the appellate jurisdiction of the Commission is thereby evoked and the typical regulatory processes of the Commission are set in motion. It should be noted that an appeal by a utility from a municipal rate ordinance operates, by statute, as consent on the part of the utility to continue to serve and devote its property to public use during the period fixed. It is further provided by statute that no appeal shall serve to vacate the newly established ordinance rate unless the utility shall elect to charge the rate in force immediately prior to the taking effect of the contested ordinance, and shall render itself liable through an undertaking filed with the Commission to refund to its consumers any amount collected by it during the pendency of the commission proceeding, in excess of the rates finally determined by the Commission to be fair.[8] If the Commission finds the ordinance rate to be unreasonable or noncompensatory, it is empowered to fix a reasonable rate to be substituted in the ordinance for the rate originally enacted; if the ordinance rate is found to be just and reasonable, it is to be ratified and confirmed.[9]

If the municipality fails for any reason to enact an ordinance, the utility may, of course, file a rate with the Commission under the same statutory provisions as those under which telephone companies are exclusively governed. But even in this situation the municipality is free to pass its ordinance at any time, and the ordinance rate, as subsequently accepted by the utility or ratified or raised by the Commission, takes precedence over any filed rate. No estimate is now available to the writer (and the conversant officers of the Commission have no opinion to express) relative to the number of gas, electric, and water rate-schedules now in force in the State which have been established respectively by the process of (a) filing by the utility (contested or uncontested); (b) municipal ordinance, accepted or not appealed; (c) municipal ordinance, appealed and ratified; and (d) municipal ordinance, appealed and raised.[10]

This, then, is the jurisdictional structure; what are its implications and

[8] G. C. 3644, 3982, 3983, 614-44, 614-45, 614-46, 614-47.

[9] Appeals from municipal ordinances are governed by sections 614-44, 614-45, 614-46, and 614-47, of the Ohio General Code, and the sections cited therein. On the matter of appeals instituted by consumers, see G. C. 614-44, and *Link, et al. v. Public Utilities Commission, et al.*, 102 O. S. 336 (1921).

A hasty search through the Commission's docket and records yields the following rough figures relative to the appeal cases instituted by utilities during the period 1911-1931, inclusive:

Appeals filed	162
Dismissed (lack of jurisdiction)	6
Dismissed (application of company, agreement of parties, or passage of new ordinance)	87
Dismissed (voided for want of prosecution)	2
Ordinance found reasonable	1
Ordinance found unreasonable	52
Pending	14

[10] It is a matter of record that no ordinance rate which has been appealed has ever been *lowered* by the Commission; just as it is true that no rate, filed by a utility and contested upon complaint of consumers or the Commission's own motion, has ever been raised.

effects? At the outset of this paper it was pointed out that the home rule provisions in the Ohio code and constitution largely negative any results which the Ohio Public Utilities Commission might, in the absence of such provisions, tend to achieve in the direction of positive, continuous control (it being recognized, of course, that even Commission control is continuous and free from rigidity only in a comparative sense). It should be clear, now, that this is the case. Over telephone rates the Commission may exercise the kind and degree of authority commensurate with its true function as a positive, administrative tribunal. In the case of gas, electric, and water rates, however, Commission control is almost entirely appellate, and even when this control is evoked the result, injected into an ordinance, must remain unaltered during the life of that legislation despite the insistent demands of constantly changing economic conditions. Most ordinances, of course, are not appealed or carried to and through the Commission to a final decision by that body, and even such ordinance rates as the Commission does chance to establish gain the attention of the Commission only once during the term of the ordinance. Thus, most Ohio rates are frozen and are effectively insulated by contract and statute from the thawing processes of Commission regulation; and it is the writer's belief that those utility rates in Ohio which are not technically immune from continuous Commission control are none the less rendered substantially rigid by the jurisdictional "atmosphere" in which they exist.

It is unnecessary here to elaborate the advantages of continuous regulation as distinguished from regulation which calls rates into question only once in a decade. One need express no opinion on the controversial problem of the exact degree to which utility prices should synchronize with the general level of prices, and still insist that adequate and effective control requires an awareness of the changing economic situation on the part of the regulatory authority and the power vested in that authority at all times fully and expeditiously to meet that situation. That rate contracts establishing unchangeable utility prices for periods of from 2 to 10 years have little to commend them in this respect is apparent. To be sure, rate contracts may be altered by mutual consent of the parties. But the achievement of economically desirable rate adjustments should not be made to depend upon voluntary (and immediately costly) action on the part of utilities during price declines (in the interest of an elusive "public favor"), or on the part of municipal councils when prices rise (in the interest of a remote "preservation of service"). Indeed, while such voluntary adjustments may occur, their appearance is rendered far less likely in any given instance by the very fact that any compensating adjustment in the opposite direction when price conditions have been reversed must await a similar "voluntary" action by the other party. And in any event it is not to the credit of a regulatory system that in such a situation it must stand idle—wholly powerless in the premises. A single thought given to the price situation which obtained in this country during the period 1914-1924, and that which exists and has still to develop in the period 1926–1936, is conclusive without argument of the necessity for regulation more responsive than rate contracts can possibly be to the general trend of prices. The plight of the utility during periods of rapidly rising prices, the plight of the consumer when the price level is plunging precipitously downward, and the generally ad-

mitted deterrent effect upon business recovery of the artificial maintenance of rigid prices during periods of depression, all bear eloquent testimony to the imperative need for continuous control of utility rates.[11]

In defense of the Ohio system one might note the ostensible advantage to utilities and consumers of rates which are certain and predictable over considerable periods of time, but the alleged advantage largely disappears when it is borne in mind that rates which are definite in terms of dollars are, by reason of that very fact, highly uncertain and indefinite in terms of effective value during periods of fluctuating prices.

Quite apart from the matter of rate flexibility, however, home rule, it is asserted, does afford certain very desirable results. Local control gives the public an unusual opportunity, upon the occasion of a rate controversy, to become aware of and educated in the intricacies of an important civic question. The issues are fought locally before the village or city council, local personalities are involved, the issues are drawn as simply as possible, the contentions advanced are clear and forceful, and the local press mirrors and interprets the entire process in all its fascinating detail. This is the stuff on which citizenship must be nourished if it is to be intelligent and active. Here is an occasion not to be lost for the stirring of civic pride and the crystallization and unification of public sentiment in a common civic cause. Local rates are primarily a matter of local concern anyway, and the first stages of their negotiation, at least, should not be removed to the distant state capitol, there to be handled coldly and with "scientific" aloofness. And if it be argued that local facilities are scarcely adequate for the technical task of rate making, the rejoinder will be made (in Ohio) that Commission regulation stands always in the background, to settle disputes which cannot be disposed of locally, and to afford such protection and technical assistance as the parties may be inclined to seek. Further, something is to be said for the merits of rate *agreements, per se*, if negotiations between the municipality and the utility can be brought to a successful conclusion at home. While something of technical exactness in rates may be sacrificed, much may be gained by voluntary contract agreements in the way of friendly and amicable relations and the elimination of long-extended, costly, heated, and often fruitless litigation before a state commission.

At whatever discount from their face value the student may care to accept the above arguments, it is undeniable that a measure of attractiveness attaches to a jurisdictional arrangement which permits *some* of the fruits of both commission and home rule regulation to be enjoyed.

But there remains the evil of frozen rates, and it is no answer to the obvious economic maladjustment involved to assert that, after all, the parties have agreed to this condition and hence neither has a right to complain if, through the passage of time and the alteration of conditions, economic injury is worked upon it. The formal soundness of this answer will appeal only to one who has regard alone for the technical outlines of a legal situation; it will not be impressive to anyone concerned with the substantive issues at stake.

There is still another point at which the Ohio situation fails to measure up to

[11] Cf. *In re Wisconsin Telephone Co.*, P. U. R. 1932 D 173 (Wis. P. S. C., 1932); and David E. Lilienthal, "Regulation of Public Utilities During the Depression," 46 *Harvard Law Review* 745 (March, 1933).

the standards of really effective regulation, a point of particular significance to those concerned with the development of administrative agencies of control in this country. This is not the occasion to debate abstract theories of administrative law and the details of its development and execution, but the writer's position in so far as it pertains to the current discussion may be stated as follows: A public utilities commission should serve neither in the capacity of a prosecutor nor a court—and this despite the appearance which commissions frequently give of attempting to do both. The task of the commission is positive—to fix utility rates in accord with the fundamental purposes which prices in our economic system are meant to serve and in the light of all existing facts of which it can become aware. The commission is not properly engaged in prosecuting the utility or the consumer; nor is it properly sitting merely as an inactive tribunal to consider passively the claims and evidence adduced before it by two contending litigants. True, the form of litigation before the commission may well be preserved, with whatever benefits may be derivable therefrom in the way of cross examinations, the sharpening of issues, and active, aggressive participation by parties immediately in interest. But above and beyond this, in a manner and to a degree foreign to our common law judicial agencies, the commission has a *positive reponsibility* to institute proceedings on its own motion whenever the interests of either the utility or the consumer so require, and in the course of those proceedings *positively* to search out on its own initiative and through its own instrumentalities all data, facts, and considerations which have a bearing upon the matters before it. The task of the commission is not to "get" the utility; nor, to repeat, is the commission merely a specialized court, intended only to sit quietly while such matters as chance to be brought before it are unfolded by the parties. The function of the commission is to *lead*, both in the institution of the proceeding (if necessary in the specific situation) and in the resulting rate investigation and determination; the commission, properly, is an alert, aggressive, positive agency of responsible public policy.[12]

The Ohio Commission has never achieved this status, and in the prevailing jurisdictional situation there is small likelihood that it will do so save on rare occasions. A Commission whose authority in the great majority of rate controversies is never called into operation at all, whose processes can be set in motion customarily only by an "appeal" from a prior rate determination, and whose decisions when promulgated are rendered inviolate from revision during the lifetime of a contract whose term is fixed independently of the Commission's ruling, can by no stretch of the imagination be conceived of as other than a passive tribunal. And this conception pervades, naturally, the entire range of Commission authority and activity—even those instances in which the statutes permit more positive action, and in the exercise of its processes when once they have been actually set in motion. There will be a lack of drive and "punch," and only an approximation of real administrative activity in the work of the Ohio Commission, as long as that body is prevented by statute and municipal action from primary, positive

[12] The commission's employees engaged in the case must be available for cross-examination, if desired by the parties, and all data and exhibits on which the commission's determination may be based must be available for inspection. It will be borne in mind, too, that administrative commissions in the United States are subject to very substantial judicial control.

regulation of the water, gas, and electric utilities, and as long, therefore, as it prosecutes all its tasks in an atmosphere of judicial calm.

Assuming that "frozen" rates and a "judicial" commission are undesirable, and yet conceding the worth while results of a certain measure of home rule regulation, particularly in a state in which home rule has been ingrained for nearly three-quarters of a century, what kind of compromise between local control and commission control can *best* be made? The concept of "emergency" regulation, of which so much has recently been heard, immediately suggests itself and the writer is inclined to the belief that this concept promises much for increased effectiveness of regulation in Ohio.

At first blush, existing legislation would seem to be at least partially adequate to meet the situation. Section 614–32 of the Ohio code provides that the Commission

> "shall have power, when deemed by it necessary to prevent injury to the business or interests of the public or any public utility . . . in case of any emergency to be judged by the commission, to temporarily alter, amend, or with the consent of the public utility concerned suspend any existing rates, schedules or order relating to or affecting any public utility or part of any public utility in this state. Such rates so made by the commission . . . shall take effect at such time and remain in force for such length of time as may be prescribed by the commission."

Another section of the code, however, together with recent decisions by the Commission and the Ohio Supreme Court, cast doubt upon the real usefulness of the present "emergency" section. Section 614–47 provides that the regulatory powers of the Commission may not be exercised with reference to rates already established in accepted franchises and rate contracts; this means, of course, that in case of the great bulk of Ohio water, gas, and electric rates, the "emergency" section is a complete nullity and it has been so held by the Commission. Similarly, the Commission has held that during the pendency of an appeal by a utility from a newly-passed rate ordinance, its "emergency" powers are stayed by the fact that its regular powers under the "appeal" section of the code have been called into operation. Within the past four months the Commission's "emergency" rulings denying jurisdiction to itself have been sustained by the State Supreme Court.[13] The contract-rate situation thus stands impervious to any inroads by Commission action in the interest of "continuous" regulation, taken under the existing statutes.

A bill now pending before the Legislature would permit the Commission to fix an emergency rate during the pendency of a proceeding arising on appeal from a rate ordinance. The bill is sound and should be passed, but it is not concerned with, and affords no remedy for, the situation here under discussion. Its effect will be confined, at best, to the establishment of a lower (or higher) interim rate, while the Commission, acting under the "appeal" section, takes under lengthy consideration the reasonableness of the ordinance rate.

It will be appreciated that the term "emergency jurisdiction" may be employed in a dual sense. It may refer to the authority of the Commission to establish rates, in view of the existence of an emergency, upon something less than the complete investigation which it customarily undertakes in performing this task. In addition, the term may be made to refer to an "emergency" power

[13] *City of Cleveland v. Public Utilities Commission*, 126 O. S. 91 (1932); and *City of Arkon v. Public Utilities Commission*, 37 O. L. R. 562 (1933).

to fix rates in situations in which, under ordinary circumstances, the Commission would be wholly powerless to intervene. It is in the former sense that the recent emergency action of the Wisconsin Commission was taken, and, apparently, the emergency legislation now pending before the Ohio Legislature is similarly to be understood.

But it is the proposal of this paper that the existence of an economic emergency, as found by the Commission, shall be made to vest authority in the Ohio Commission to assume immediate jurisdiction over all water, gas, and electric rates in the State, even though such rates have been established by ordinance contracts, and to revise those rates in line with the sharp change in economic conditions. In order to preserve the significant benefits of home rule regulation in Ohio, and, at the same time, to eliminate the evil of frozen rates and at least partially to transform the "judicial" character of the Commission, it is proposed that the jurisdictional structure of local and State Commission authority be remodelled to provide the following: In the absence of municipal action, the utilities (water, gas, and electric) shall, as now, file rates with the Commission, subject to the approval of that body; as now, municipalities may at their pleasure establish rates by ordinance which, upon acceptance by the utility, shall become binding upon both parties, presumptively for the term stipulated (in any event, for not more than 10 years), and, if not accepted, to be appealed and made subject to Commission action as at the present time; but, finally, if an economic emergency be found and declared by the Commission to exist, that body may upon complaint or its own motion inquire into and revise *all* rates, whether established originally by filing or by municipal ordinance.[14]

The successful operation of the plan in the manner contemplated and with the hoped-for results—to achieve the best of both home rule and Commission control in a situation where the background for such an adjustment is ideal—would depend finally, of course, upon the ability and judgment of the persons called upon to administer it, but so, indeed, does the success of any authority-giving legislation. An able and alert Commission will find here ample opportunity and authority to function positively as an active, administrative body, and municipal councils will still be possessed of all the rate power which they can have any substantial interest in retaining. And the responsibility for at least the semi-continuous adjustment of utility rates to marked changes in economic conditions will be placed definitely and beyond the possibility of avoidance where it belongs. That the plan will present difficulties of administration is clear; it seems to commend itself, none the less, as an imperative first step in a direction in which, unless this step proves adequate, even greater strides must be taken in the future.

[14] It is not the purpose of the present paper to consider the extent to which "emergency" procedure would be employed in determining the new "emergency" rates. Nor is it the purpose of the writer here to discuss the question bound to be raised relative to the validity of the proposal under Article XVIII, Section (4) of the Ohio Constitution (cf. note 4, *supra*), or the possibility that the institution of the plan would require a constitutional amendment.

Book Reviews

Ruggles, C. O. Problems in Public Utility Economics and Management. *New York: McGraw-Hill Book Company, 1933. pp. xv, 737. $6.*

Professor Ruggles of the Graduate School of Business Administration of Harvard University has undertaken in this book to present a group of actual public utility situations and regulatory or legal decisions bearing on public utility problems of interest to students in this field. The book is supplementary to a similar volume, *Problems in Public Utility Management*, previously assembled by Professors Cabot and Malott, also of the Business School.

While this volume is properly classed as a case book, its usefulness is by no means restricted to students of public utility problems. The cases have been so selected and arranged that they give a coherent picture of public utility activities without greater discontinuity than that encountered in other books on the same subject.

Among the matters dealt with in the selected cases are the characteristics of public utilities, their problems of operation, organization, finance, marketing, valuation and rate making, and the broader problems of regulation. The cases dealing with holding companies and rate forms and levels are of particular interest at the present time on account of the widespread insistence that public utilities should share in the losses incident to business demoralization, although they were not permitted in earlier years to share in the then abnormal profits of prosperity.

In his selection of cases on different subjects the author has presented opposing views on controversial subjects in order that the student may form intelligent opinions thereon. Whether the presentations are adequate in all cases may be questioned. At the conclusion of each group of cases questions are drafted to test the student's ability to make an adequate analysis of the data included therein. As an example, about eight pages are devoted to the subject of depreciation deductions in valuation, from which the student is asked to draw his conclusions. Many volumes have been written on this subject, and the reviewer has seen comparatively few statements of opinion from informed investigators which appear wholly consistent or logical.

This illustration is, however, not typical of the book as a whole or its purposes, and the author is to be commended for his skill in selection and for the accuracy with which he has stated succinctly the essential factors in the many important problems which the book discusses.

The lay reader will not concern himself so much with the solution of the problems presented as with the wealth of valuable statistics which are assembled in the various cases. These relate not only to the technical phases of the business, of primary interest to its executives and employees, but also to the broader problems of public relations with which all good citizens should be concerned.

L. R. Nash

Wright, Frank Lloyd. The Disappearing City. *New York: William Farquhar Payson, 1932. pp. 90. $2.50.*

Mr. Frank Lloyd Wright, long recognized as America's most outstanding architect, now turns his imagination toward creating the city of the future, his ideal city, "Broadacre City," so called because it is based upon the ideal of an acre of land per family.

Mr. Wright devotes the opening sections of his essay to an analysis of the weaknesses of our present economic system. Recognizing the housing of the poor as a problem of major importance, he accepts as the essential cause of poverty the theory of triple unearned increment: rent, interest, and the profits of the machine. He then proceeds specifically to the weakness of the present-day metropolis: its super-concentration of population, its traffic congestion, its false land values. "The overgrown city of the United States stands, thus, enforced upon our undergrown social life as a false economy."

In his Utopian civilization Mr. Wright shuns the ideal of Le Corbusier of a highly concentrated skyscraper "city of tomorrow." In contrast, he presents "Broadacre City," a plan for complete decentralization, a back-to-the-land movement for rich and

poor alike. "Broadacre City" is a veritable pulling of the city out into the countryside, a fact to be accomplished through the universally available medium of motor transportation. Mr. Wright is at once a devotee of individual freedom and a prophet of the machine age. He has none of the current terror of the machine as master of man. His glorification of the machine is a result, rather, of faith in its power to serve man.

In this new city, then, each family is to own its own acre of land located along a super-highway. Here the householder will build his prefabricated house, section by section, all to be paid for out of earnings from some equally decentralized factory. Each family will have its own garden, lawn, automobile—thereby becoming semi-independent. Occasional skyscraper office buildings and apartments (for people not thoroughly emancipated) will be located in large parks. The author's dream of an organic architecture is broadened into his ideal of an organic countryside. Shopping centers will be concentrated around fuel centers, filling stations, which have become department stores in the sense of the present-day drug store. Schools will be small but distributed at frequent intervals. Modern means of communication, the radio, the telephone, television, the aeroplane, and automobile will make this decentralization possible.

No plan is presented for either the financing of or the administration of this new type of cityless country. One cannot but give pause to a few questions which suggest themselves: Would so complete a lack of community organization be amenable to the inhabitants? Is not man naturally a gregarious animal? What will become of the beauty of the countryside, once it becomes webbed with giant highways and flecked with super-filling stations?

GEORGE FRED KECK

HOUSING OBJECTIVES AND PROGRAMS. *Washington: President's Conference on Home Building and Home Ownership, 1932. pp. xxv, 345. $1.15.*

President Hoover's Conference on Home Building and Home Ownership has published its reports in 11 volumes. The last of these is *Housing Objectives and Programs*. The first 10 volumes contain reports of 25 specialized committees. This last volume contains the reports of six correlating committees: Standards and Objectives; Research; Legislation and Administration; Education and Service; Organization Programs, Local and National; Technological Developments.

This volume is typical of the entire series, in that it presents a mass of material none too well tied together. The correlating committees may have correlated fairly well each in its own particular field, but the correlation of the work of the correlating committees is inadequate.

The Hoover Conference did a lot of work, a lot of talking, and considerable thinking. It served a useful purpose, but these reports are no more than the beginning of a start. Housing is just as full of unsolved problems today as it was in the latter part of 1931. One who wants material to use in thinking will find *Housing Objectives and Programs* of value.

In the foreword to this concluding volume, Robert P. Lamont states: "Most of the defects of housing in this country are the result of the aimlessness of our present housing activity." The work of the Conference has contributed less to the removal of this aimlessness than one might have hoped. The problem ahead is to take from the great mass of information on housing now available that which is pertinent and timely and devise ways and means of putting it to practical use. Mr. Lamont makes further comment pertinent here: "The solid foundation of all improvement—material or spiritual—is understanding. A people will have the housing that it demands and is willing to work for. It can neither be legislated into nor endowed with good housing. That, like every other good in the world, must be earned. All that leadership can do is to educate the public to know what good housing is and how to acquire it."

JOHN H. MILLAR